CIRCULATION AND TRANSIT ELEMENT

PUBLIC HEARING DRAFT

Sonoma County General Plan

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1.0 INTRODUCTION

1.1 AUTHORITY AND PURPOSE

The legal authority for the Circulation and Transit Element is expressed in Section 65302(b) of the Government Code of the State of California. This element has been a mandatory component of local general plans since 1955. The content of the Circulation Element is required to address the location and extent of existing and planned transportation routes and facilities. It is further required to be correlated with the land-use element of the general plan in a manner that will assure that the planned transportation system will adequately accomodate future travel demand and that will contribute to rather than inhibit the attainment of desired land-use patterns.

The general purpose of Sonoma County's Circulation and Transit Element is to establish a plan, policies, and implementation program for future transportation system improvements that will satisfactorily accomodate the future travel demands that would be generated by the projected size and spatial distribution of population and economic activities by year 2005. It is intended to comprise a plan and implementing measures for an integrated, multi-modal transportation system that will safely and efficiently provide for the needs of all population segments and for the transport of goods and materials. Since financial resources for future transportation improvements are likely to be limited, a major purpose of the element is to express policies that will promote the efficient utilization of existing transportation facilities and measures that are less capital-intensive. Finally, the intent of the Circulation and Transit Element is to establish a plan for future transportation facilities that will 1) help accomplish the planned pattern of future land uses, 2) not be growth-inducing, and 3) contribute to the protection of environmental quality and achievement of environmental goals.

1.2 RELATIONSHIP TO OTHER ELEMENTS

Section 65300.5 of the Government Code of the State of California requires that the various elements of a general plan comprise an integrated, internally consistent, and compatible statement of policies for the adopting agency. California law particularly emphasizes that the Circulation and Transit Element be coordinated with the Land-use Element. The transportation plan, policy and implementing measures established by this element comply with the requirement in the following manner:

1. The Circulation and Transit Element utilizes the same projections of future population and economic activity as does the Land-use Element. Those projections include a population of 464,500 by year 2005 and an employment level of about 190,000 jobs.

2. The modelling of future travel demand, using the TRANPLAN model, was accomplished using the same spatial distribution of future population and economic activity as is expressed in Section 3.0 of the Land-use Element. The land-use data were further disaggregated to 199 traffic analysis zones for modelling purposes. These disaggregations were accomplished in a manner which is consistent with the holding capacities of the land-use plan maps.

3. The transportation plan and policies are designed to contribute to achievement of the planned land-use pattern and to accomplishment of land-use objectives and policies; both elements emphasize city-centered development, especially within the Highway 101 corridor from Petaluma to Windsor, and growth limitations in rural areas.

Some transportation facilities are addressed in other elements of the Sonoma County General Plan. Air transportation facilities and policies have been determined to be sufficiently important to warrant coverage by a separate element. The Air Transportation Element addresses all public use airports in the county, with particular emphasis on the County-owned Sonoma County Airport. Bikeways, since their use within Sonoma county is primarily recreational, are addressed in the Open Space Element. The Noise Element is also closely coordinated with the Circulation and Transit Element; projected noise contours for highway sources have been established based upon the highway plan and forecasted traffic volumes along the various roadways.

The portion of the Resource Conservation Element which addresses atmospheric resources is also coordinated with the Circulation and Transit Element. Emmissions of pollutants by motor vehicles is the major source of air pollution in the county. Evaluations of air quality and policies for its maintenance and protection have taken into account the projected traffic volumes and conditions on area highways.

1.3 SCOPE AND ORGANIZATION

The Circulation and Transit Element addresses highways, transit, and transportation systems management (TSM). The element contains six major technical and policy sections. The first of these, Section 2.0, summarizes existing and projected future traffic conditions, problems, and needs. Technical data and information are very briefly summarized; readers interested in the detailed technical data and documentation will find this information in background reports prepared for the County of Sonoma by DKS Associates, a transportation planning consulting firm. Section 3.0 of the element expresses general, systems-level goals and policies which are intended to correlate the various transportation modes with each other and with goals and policies related to other subjects. The next three sections express the detailed goals, objectives and policies for transportation, addressing highways, transit services, and TSM, respectively. Section 7.0 presents policies and

identifies planned improvements to transportation facilities located within each of the nine sub-county regions. The final section expresses the implementation program to carry out transportation policy and accomplish objectives.

2.0 EXISTING AND PROJECTED FUTURE TRANSPORTATION NEEDS

2.1 TRANSPORTATION SYSTEMS CONDITIONS IN 1984

Sonoma County's transportation system as of 1984 was composed of several federal or state highways, including two freeways, as well as numerous county routes, rural and urban highways, several local and regional transit systems, paratransit services, and rail freight service. Travel within the county is a function of the size and spatial distribution of population and economic activity internally, but also of the relationship to other major activity centers in the region. Travel patterns are especially affected by employment centers in northern and central Marin County and in downtown San Francisco. Due to the dispersal of activities among several cities and unincorporated urban areas within the county, and the low average density of land uses, the private automobile is the dominant mode of travel. Except for long-distance commuting to San Francisco and to a lesser extent to Marin, transit use is limited primarily to a transit-dependent population that doesn't have access to automobiles, the elderly, students, and the physically handicapped.

2.1.1 Existing Transportation Network: 1984

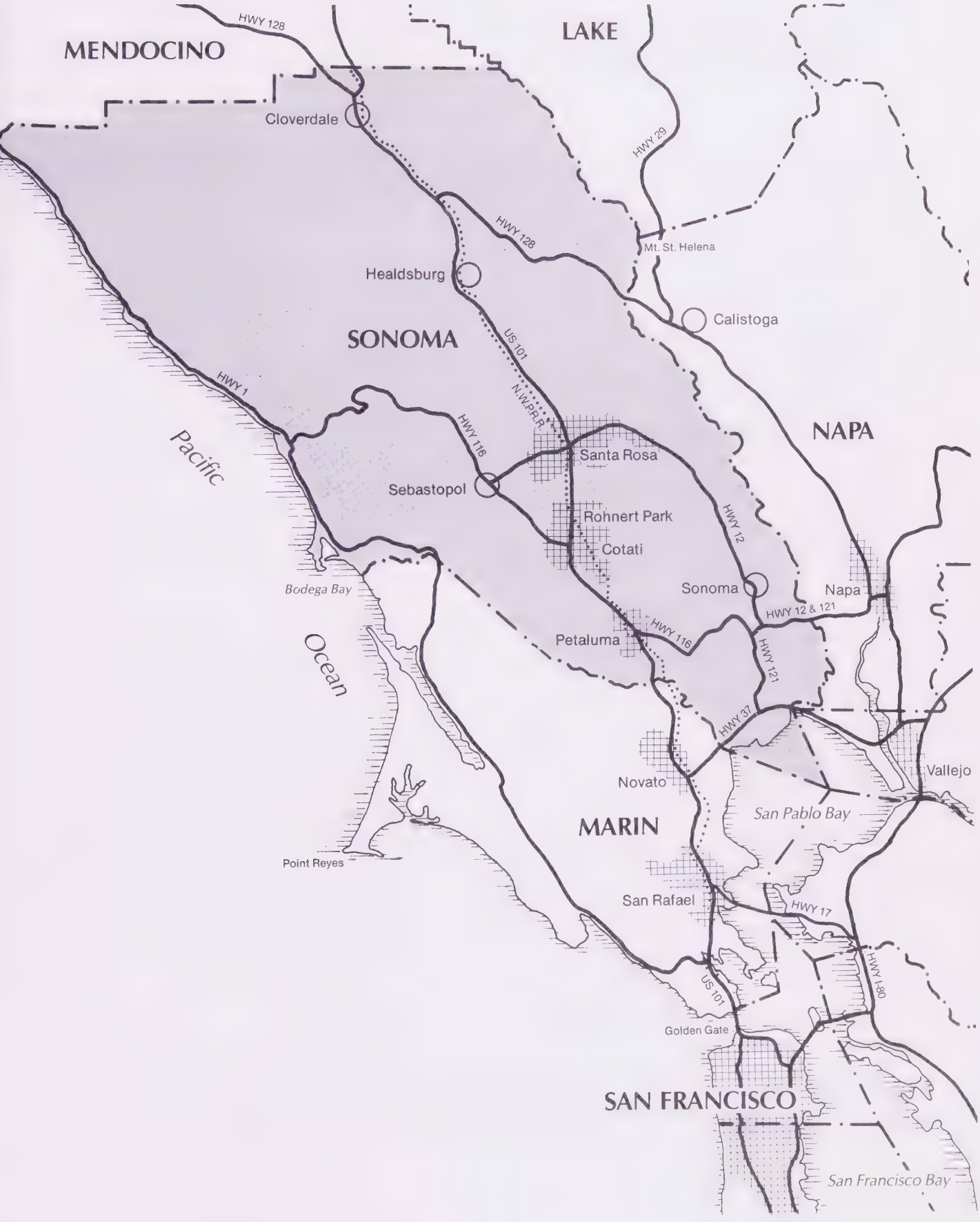
Regional Setting and Network: Travel conditions within Sonoma County are greatly influenced by its location at the northern edge of the San Francisco Bay area region (Figure CT-1). Due to the geographical configuration of the Northbay area, the County's highway system is linked to Marin and San Francisco principally by a single route, the U.S. Highway 101 freeway. This route provides the only transbay connection, at the Golden Gate Bridge, to San Francisco, and is heavily used by commuters during peak travel periods. Although State Highway 37 provides an alternative route to the Eastbay, the principal connection to that portion of the region is also along Highway 101, with the Richmond-San Rafael bridge providing the transbay segment of the route. Highway connections between Sonoma County and Napa to the east are also confined primarily to one route, Highway 12/121, which links the Sonoma Valley with the lower portion of the Napa Valley. This route is heavily congested during certain periods, especially on weekends, due principally to tourism and recreational travel. In the north, U.S. Highway 101 provides the primary route to Mendocino County, along with State Highway 128 which connects Cloverdale to the Mendocino Coast. Traffic conditions on Highway 101 north of Cloverdale at the county line, where there are only two travel lanes, are especially congested on weekends as a result of recreational travel which originates or has a destination in the Bay Area.

Highway System. Sonoma County's highway network includes the aforementioned U.S. Highway 101 freeway and several other state highways, including highways 37, 116, 121, 12, 128, and Highway 1, the Pacific Coast Highway. Additionally, the highway system includes numerous county-provided arterials and local roads, as well as local streets and highways within the cities. A portion of Highway 12 within Santa Rosa is constructed to freeway standards. Outside of the urban areas, however, most state and county highways are two-lane rural roads. With the exception of the central Santa Rosa-Cotati Plain and the Sebastopol area, the county is not extensively traversed by roadways. Total highway mileage includes approximately 316 miles of federal and state highways, 1,458 miles of county-maintained roads, and 598 miles of city-maintained streets and roads.

Of special importance to the County are several roadways which are parallel to and comprise a part of the Highway 101 corridor system. These highways have the potential to provide alternatives routes for longer, intra-county vehicle-trips during the peak periods of commuter travel on Highway 101, and thus the potential to alleviate congestion on the later facility during those periods. On the west side of Highway 101, the parallel arterial consists of Stony Point Road from North Petaluma to its intersection with Highway 12, and Fulton Road from Highway 12 northward to the Sonoma County Airport and to Old Redwood Highway at the community of Larkfield. On the east side of Highway 101 and south of Santa Rosa, Petaluma Hill Road southward to Adobe Road and Adobe to Frates Road (Highway 116) comprise the parallel arterial. North of Santa Rosa, the parallel arterial function is compromised to a considerable extent by the frictions of abutting commercial and residential development, but consists of Old Redwood Highway northward to its interchange with Highway 101 at the community of Windsor.

Transit Network: As of 1986, fixed-route transit services were provided within Sonoma County by eight transit operators. These included inter-county regional service by the Golden Gate Bridge, Highway and Transportation District (hereafter Golden Gate Transit) and the Mendocino Transit Authority; intra-county service by Sonoma County Transit; and local fixed-route service by five municipalites. The principal inter-county service was by Golden Gate Transit, which provided regional and commuter services on routes connecting the Santa Rosa, Sebastopol, Rohnert Park, Cotati, and Petaluma areas with Marin and San Francisco. Mendocino County Transit Authority, by contract with Sonoma County, provided bus connections from the Mendocino and Sonoma Coasts to Santa Rosa via Bodega Bay and Sebastopol. Sonoma County Transit, a division of the Sonoma County Public Works Department created in 1980, is a publicly-supported, fixed-route transportation system which provided scheduled bus service along major highways connecting the county's eight cities and the larger unincorporated communities. Sonoma County Transit's focus was on inter-city travel within Sonoma County; Santa Rosa was the hub of its network, with routes extending to Sonoma, Petaluma, Rohnert Park/Cotati, Sebastopol, Guerneville/Duncans Mills and Cloverdale/Healdsburg. Local fixed-route bus service within cities was provided by municipal transit systems in Santa Rosa, Petaluma, Healdsburg, Sebastopol, and Cloverdale and under contract by Sonoma County Transit in

Figure CT-1



NORTHBAY REGIONAL HIGHWAY NETWORK

Rohnert Park and Cotati. The share of trips made by transit as of 1984 was low, only about one percent countywide, although transit ridership accounted for over 35 percent of the commute trips to San Francisco.

2.1.2 Travel Demand in 1984

Travel demand has been simulated for 1984 using the TRANPLAN Model, and is measured by the number of person-trips made on an average weekday and during the weekday A.M. peak period. Demand estimates are further stratified by trip purpose and by mode. Modelling encompassed 199 traffic analysis zones within Sonoma County and 18 external zones, including seven in Marin, two in San Francisco and the Peninsula, six in the Eastbay, and three in areas north of Sonoma County. Model parameters were calibrated based on an extensive set of traffic counts available from the Sonoma County Public Works Department, Caltrans, and the cities. The total number of person trips estimated for an average weekday during 1984 was 1,394,700. About 17 percent of these trips, or 239,100 were estimated to be home-based work trips, while another 60 percent (850,400) were home-based trips made for other purposes such as school, shopping, visiting friends, and so on. The remaining 22 percent of person-trips were estimated to be between locations other than the traveller's home.

Since weekday peak period congestion problems are primarily a result of home-based work trips, or commuting, estimates of the distribution of these trips are especially important. The data indicate that just over 18 percent of home-based work trips with origins within the county were external trips to work locations in other counties. The majority of these trips utilize the Highway 101 corridor. The external commute is, however, a relatively small part of the total commute picture. For example, over 3,000 persons commuted from homes in the Santa Rosa region to work in the Rohnert Park region and another 2,000 to work in the Petaluma region, while another 3,500 continued to work locations in Marin or San Francisco. Of a total of 74,800 peak period home-work trips in the four planning regions along the 101 corridor from Healdsburg to Petaluma, 50 percent (37,800) were internal to the planning region, 28 percent (20,800) were from one planning region to another of the four, while the smallest share, 22 percent or 16,200, were to or from work destinations outside the county. However, more than 50 percent of peak period transit riders had destinations outside Sonoma County, indicating that transit demand during the maximum commute period is focused primarily on very long distance trips.

2.1.3 Transportation Conditions and Problems in 1984

Figures CT-2a and CT-2b show estimated existing 1984 traffic volumes for an average weekday and for an average weekday A.M. peak period, respectively. Maximum daily traffic volumes in the county were experienced on the U.S. 101 Freeway, with about 82,000 vehicles just south of the Highway 12 interchange in

DAILY TRAFFIC VOLUMES, 1984 AND PROJECTED 2005

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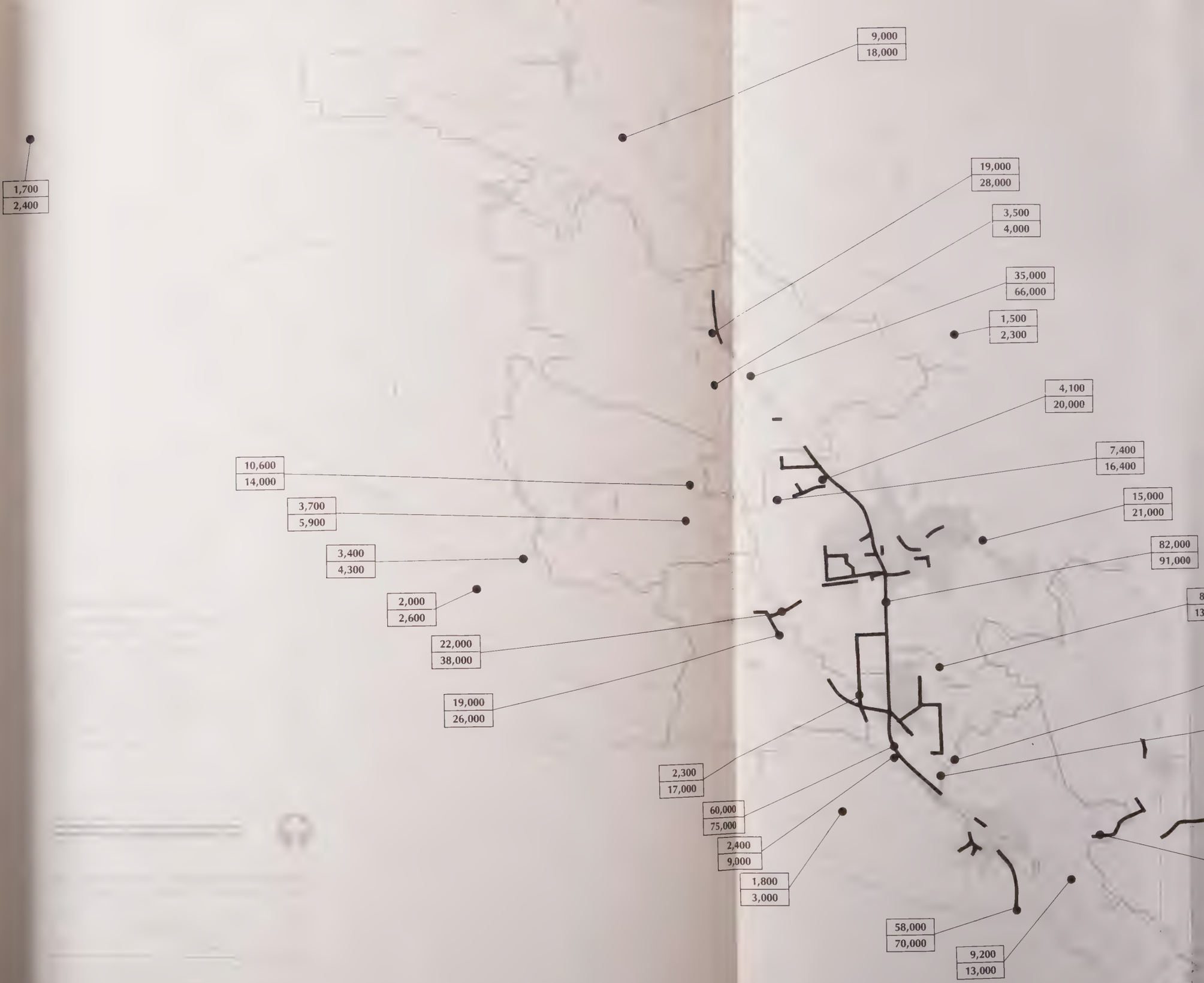


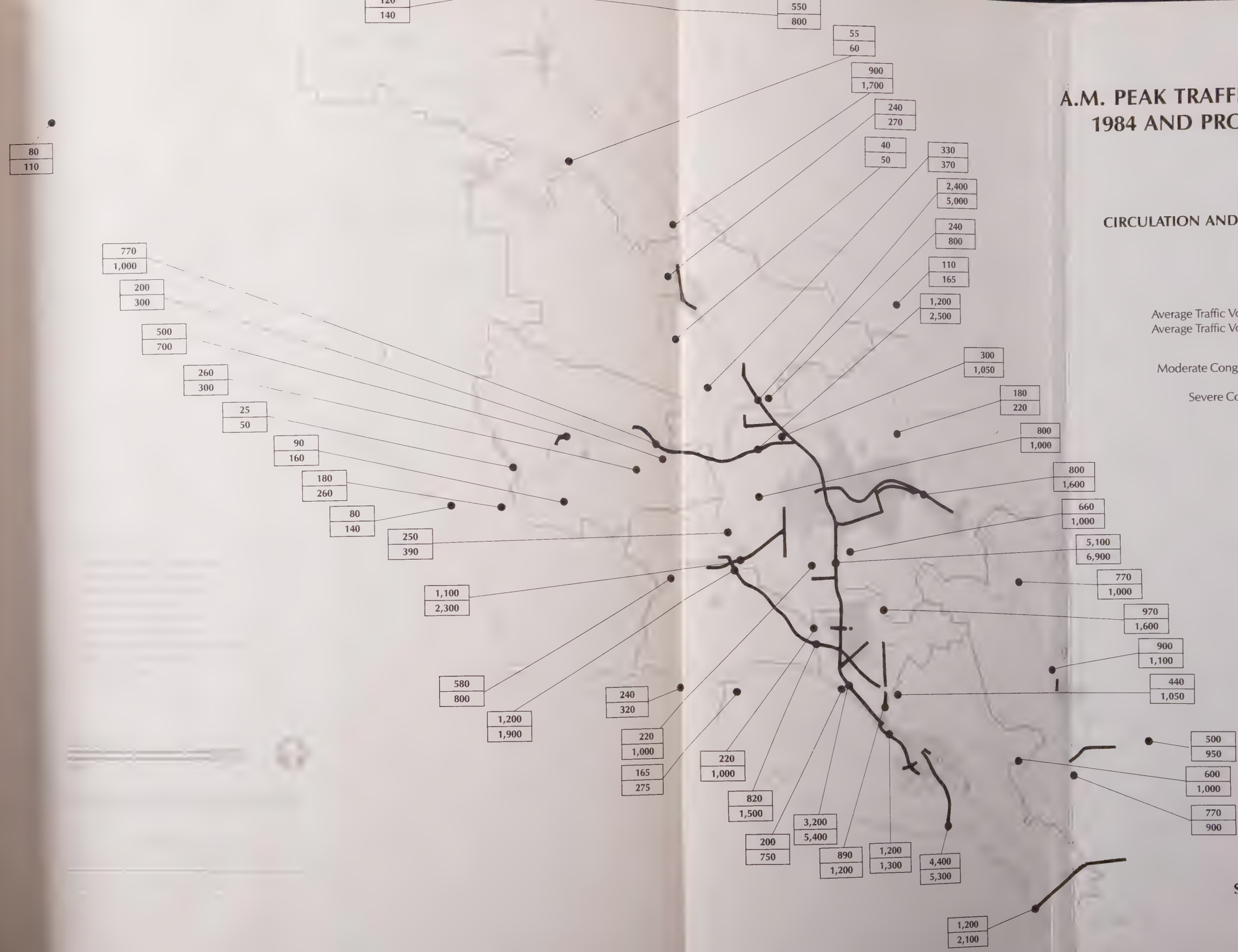
Average Traffic Volumes 1984 / Average Traffic Volumes 2005: 5,000 / 8,000

Moderate Congestion (D/F)

Severe Congestion (F)

A.M. PEAK TRAFFIC VOLUMES, 1984 AND PROJECTED 2005

CIRCULATION AND TRANSIT ELEMENT



Santa Rosa, 60,000 between Rohnert Park and Petaluma, and 58,000 at the Marin County line. Roadways with severe congestion at "F" Level-of-Service were limited to just a few locations, principally at several U.S. 101 interchanges/cross-routes in the cities of Santa Rosa, Rohnert Park-Cotati, and Petaluma. Moderate traffic congestion occured in more numerous locations, at several points along the Highway 12 and 121 corridors in the Sonoma Valley, along several lengthy segments of U.S. 101 southward from the River Road interchange to the Marin County line, along River Road, along Highway 12 from east Santa Rosa to Sebastopol, along Highway 116 from Sebastopol to Cotati and along Petaluma Hill Road from Cotati Avenue to Petaluma.

2.2 PROJECTED FUTURE TRANSPORTATION CONDITIONS

2.2.1 Projected Travel Demand

Travel demand, as measured by person- and vehicle-trips for each of several trip purposes has been forecasted for year 2005 using the TRANPLAN MODEL, in which demand is a function of projected land-use in each of the 199 and 18 external traffic zones, characteristics of the planned transportation network, and household behavioral parameters. Projected land use was based upon the land-use plan expressed in the Land-use Element, and was described for each zone in terms of the following data items: number of households in each of six income-housing type categories, number of employed residents, median household income, number of retail and other jobs, and number of seasonal dwelling units. The number of person-trips projected for the average weekday by 2005 is 2,090,000, an increase of 52 percent over the number estimated for 1984. Vehicle-trips are forecasted to number 1.57 million daily by year 2005, with 11.38 million vehicle-miles traveled daily; average trip length would be 7.2 miles, a slight decline from the 7.3 estimated for 1984. The number of person-trips projected during the peak A.M. commute period is 225,100, an increase of 57 percent over 1984.

Since most traffic congestion problems and capacity deficiencies are experienced during the peak commute periods, forecasts of home-based work trips are especially important. Forecasts based on the land-use plan indicate that these trips would number about 360,000 daily by year 2005, or 180,000 in each direction. Approximately 17.6 percent of home-based work trips are projected to be to work destinations located outside the county; the remaining work trips were about evenly divided between destinations within the same planning region as the residence and destinations in the other eight regions. The proportions of home-to-work person-trips made to work destinations outside the county is projected to be about 37 percent in the Petaluma region, 32 percent in Rohnert Park, 10 percent in Santa Rosa, and under seven percent in Cloverdale.

2.2.2 Projected Modal Split and Transit Demand

While the transportation plan places a strong emphasis on transit, the mode share for regional and intercity transit systems is projected to increase by just under one percentage point for the peak A.M. period, from about 1.3 percent in 1984 to 2.2 percent by year 2005. Peak period boardings on regional/intercity transit are projected to increase, however, by 266 percent, from 1,900 to 5,050, and average weekday boardings are projected to increase by nearly 250 percent to 19,200. The transit-emphasis of the plan is estimated to reduce auto vehicle-miles of travel by over 57,000 miles during the typical weekday peak period and by 191,000 vehicle-miles of travel on the average weekday, compared to a baseline case where existing transit service would be increased proportional to population increases. The improved transit system and HOV/Transit lanes on the U.S. 101 Freeway are projected to reduce peak-period vehicular volumes by 1,200 at the Marin County line -- 500 as a result of transit improvements and 700 vehicles as a result of the HOV lane. Average vehicle occupancy during the A.M. peak would rise from 1.26 persons to 1.38 with HOV lanes.

2.2.3 Projected Future Traffic Volumes and Conditions

Figures CT-2a and CT-2b show projected year-2005 traffic volumes at selected points on principal roadways during a typical weekday and peak A.M. period, respectively. Roadway segments which are expected to operate by year 2005 at varying degrees of congestion are also shown. Volumes along the U.S. 101 Freeway are projected to be highest in the Santa Rosa area, with over 91,000 vehicles daily, while volumes are projected to be 66,000 near Windsor, 75,000 between Rohnert Park and Petaluma, and 70,000 at the Marin County line. Several roadway segments in Santa Rosa, Rohnert Park, and Sebastopol are projected to be severely congested during the A.M. peak period; moderate congestion is projected for limited periods during the morning commute on several roadway segments in unincorporated areas, including: Highway 12 north of Sonoma, Highway 121 in the Schellville area, Highway 37, Petaluma Hill Road south of Cotati Avenue, U.S. 101 along most of its length south of Windsor, River Road from U.S. 101 to Hacienda, Highway 116 south of Sebastopol and in central Guerneville, Highway 12 from Sebastopol to Fulton Road, Fulton Road north of its Highway 12 interchange, and Airport Boulevard west of the Highway 101 Freeway.

2.2.4 Future Recreation-related Travel

Many highways in Sonoma County experience their highest traffic volumes on weekends, particularly in the summer, as a result of recreational travel. Although most weekend travel on county roadways is by local residents, a substantial share of recreational travel is by tourists from outside the county. This situation is likely to continue as a result of significant recreational travel generators located within the county and in the Redwood

Empire area to the north. Within Sonoma County these generators include: Pacific Ocean shore and beaches, Russian River beaches and sightseeing, Lake Sonoma, Sears Point Raceway, over 100 wineries and winetasting centers, several state and county parks, and a large number of weekend and vacation homes. Roadway segments likely to experience significant weekend travel delays include State Highways 12, 121 and 116 in the Sonoma Valley, Lakeville Highway and Stage Gulch Road in the Petaluma Area, Highway 116 from Cotati to Jenner, Bodega Highway, Bohemian Highway, Highway 1 from Bodega Bay to Jenner and north of Fort Ross to the Sea Ranch, River Road, Westside Road, Dry Creek Road, Alexander Valley Road, and Dutcher Creek Road. Maximum traffic volumes on summer weekends are projected to exceed average weekday volumes by factors ranging from 1.15 to 1.8 on these roadways. The highway plan will act to alleviate weekend congestion on some routes including U.S. 101 south of Windsor to the Marin County line and through Cloverdale, State Route 12 in the Sonoma Valley and Highway 1 in the vicinity of Bodega Bay.

2.2.5 Future Transport of Goods and Materials

Of the 257,000 vehicles registered in Sonoma County as of 1986, about 65,000 were commercial vehicles. The development of motorized goods transport has afforded freedom from the traditional locational constraints such as distance from dock or rail depot. Commercial truck travel in Sonoma County is related to agriculture, retail distribution, construction, gravel mining, delivery to and from industrial facilities, gasoline and fuel distribution, and household goods moving. Truck traffic is especially significant on Highway 37, U.S. 101, and Route 128 where percentages of trucks range from seven to 15 percent. Truck-generating land uses are generally concentrated in the Cloverdale/N.E. County, Healdsburg, Southwest Santa Rosa, and Petaluma areas. The areas of greatest increase in truck travel generally coincide with areas of future industrial development and include the U.S. 101 Freeway, which carries the largest and most visible through or intercounty truck traffic. Forecasts of future truck travel on freeways and arterial and collector highways were used in generating noise contours for those highways.

3.0 GENERAL, SYSTEMS-LEVEL GOALS AND POLICIES FOR TRANSPORTATION

3.1 CORRELATION OF THE TRANSPORTATION SYSTEM WITH PLANNED LAND USE

Goal CT-1: It is a goal of the County of Sonoma to develop a comprehensive circulation system that is coordinated with the planned land-use pattern expressed in the Land-use Element.

Objective CT-1.1: It is the County's objective that its transportation system be designed and implemented in a manner that will: a) adequately accommodate the future travel demand which would result from the projected year-2005 population and employment levels, as expressed in Section 3.0 of the Land-use Element, and b) contribute to, and not detract from, achievement of the desired land-use pattern which emphasizes city-centered growth, especially in the urban corridor from Petaluma to Windsor, and limited growth in rural areas.

The County shall employ the following policies:

CT-1a: The transportation system plan and individual improvement projects shall be designed and constructed to provide, but not exceed, the capacities that are needed to adequately serve the travel demand which would be generated by a year-2005 population level of 464,500 and in-county employment of approximately 190,000.

CT-1b: The transportation system plan shall be formulated in a manner that will encourage the concentration of population and employment activities in urban centers in the Petaluma to Windsor corridor.

CT-1c: The transportation system plan and individual improvement projects shall not be sized, located, or otherwise designed or constructed in a manner which would facilitate or induce growth in rural areas that are planned for agricultural or resource-related uses. Projects shall be sized and designed to safely and efficiently accommodate existing and projected future traffic volumes. Some bridges may be designed and constructed for a time horizon that extends beyond year 2005.

CT-1d: A variety of service choices shall be made available as options for transportation consumers at major employment and activity centers, including direct accessibility to express transit routes and primary arterial highways.

CT-1e: Transportation capacities provided in the 101 corridor linking Sonoma County to Marin and San Francisco should not be growth-inducing for residential development beyond that level contemplated by the Land-use Element of the Sonoma County General Plan.

3.2 AVAILABILITY OF TRANSPORTATION SERVICES TO SPECIAL POPULATION GROUPS

Goal CT-2: It shall be a goal of Sonoma County to encourage development and provision of transportation services in a manner that makes them accessible to all segments of its population, with special emphasis on expanding opportunities for groups with low mobility, including those who do not have access to a private automobile.

Objective CT-2.1: It is the County's objective that the transportation system be designed and implemented in a manner that makes service options available to the elderly, physically handicapped, youth, and persons with limited incomes so that they will not be deprived of opportunities to participate in a full range of human activities because of insufficient mobility.

The County shall utilize the following policies:

CT-2a: The transportation system plan shall provide for a range of transportation options in each of the nine sub-county regions so that residents in these areas have accessibility to the larger array of goods and services available within the urban centers in the Highway 101 corridor.

CT-2b: Transit facilities and equipment shall be planned and designed in a manner that provides for reasonably convenient and easy access by elderly and physically handicapped persons.

CT-2c: Transit routes shall be located so as to provide convenient access to employment centers, retail areas, recreational areas, schools, medical facilities, and areas of concentration of housing in multi-unit structures or mobile home parks.

3.3 COMPATIBILITY OF TRANSPORTATION SYSTEM IMPROVEMENTS WITH MAINTENANCE OF ENVIRONMENTAL QUALITY

Goal CT-3: It is a goal of Sonoma County that its transportation system be designed, constructed, operated, and otherwise implemented in a manner that contributes to achieving and/or maintaining a high level of environmental quality.

Objective CT-3.1: It shall be Sonoma County's objective that all transportation system improvements have a positive or beneficial environmental effect by reducing air and noise pollution in comparison to the "no project" alternative.

Objective CT-3.2: It shall be Sonoma County's objective that all transportation system improvements be accomplished in a manner which, to the extent practicable, minimizes disturbance of natural landforms, water courses, vegetation and other features of the natural environment.

The following policies shall be employed by the County:

CT-3a: Measures which will reduce the number of vehicle-miles traveled during peak periods are encouraged for their beneficial effects in reducing emissions of atmospheric pollutants by automobiles. These measures include:

1) incentives for carpooling and vanpooling
2) preferential parking for carpools and vanpools
3) HOV and transit vehicle lanes along Highway 101 from Windsor to the Marin County line.

4) incentives and penalties to increase transit ridership, including parking restrictions and fees, establishment by employers of transportation allowances, provision of convenient bus turnouts and shelters, and establishment of shuttle buses to connect large employment centers to express bus stops.
5) incentives for flex-time and modified work schedules

CT-3b: Route alignments for any new roadways and for improvements to existing roadways shall be selected so as to avoid, wherever practicable, disturbance of biotic resource areas and to minimize destruction of trees.

CT-3c: New transportation facilities and improvements to existing facilities shall be located and designed in such a manner as to minimize disruption to developed neighborhoods and communities.

CT-3d: New public roadways shall not be extensively provided in land areas designated within any of the three natural resource use categories by the land-use plan, except for access roads to the Geysers geothermal power production areas; planned new arterial and collector roads are shown on Figures CT-7a through CT-7i.

CT-3e: Mitigation measures shall be used to the maximum extent practicable to reduce or avoid adverse environmental impacts of any transportation project.

3.4 SAFE AND EFFICIENT TRANSPORTATION SYSTEMS

Goal CT-4: It is a goal of the County of Sonoma that its transportation systems be designed, constructed, operated, and otherwise implemented in a manner which promotes safety, convenience, and efficiency in their utilization.

Objective CT-4.1: It is an objective of the County that the transportation system plan achieve the lowest total vehicle-hours and vehicle-miles traveled which are feasible and practicable based upon the projected levels and distribution of year-2005 population and economic activity.

The County shall utilize the following policies:

CT-4a: Transportation projects shall be approved only when they fulfill a demonstrated need, and have a reasonable relationship of costs to the expected benefits.

CT-4b: Transportation system improvements and operations shall be located and designed so as to promote and give priority to energy-conserving activities and utilization.

CT-4c: Priority shall be given to 1) measures that improve the safety and more efficiently utilize the capacities of existing transportation facilities through low-cost improvements such as signalization, channelization, and turning lanes; and 2) measures that will increase the number of people per vehicle and reduce peak hour traffic.

CT-4d: The Public Works Department shall be responsible for establishing and enforcing access standards regarding new driveways and other encroachments to arterial highways. These standards may include functional layout, location, and spacing requirements so as to minimize side frictions that are detrimental to safe and efficient functioning of arterials.

CT-4e: Outside of urban service areas, commercial land uses, including travel-related commercial services such as gasoline stations and restaurants, shall be restricted along major traffic arteries to existing uses as of 1986, so as to avoid potential interference with the traffic functions of these highways.

CT-4f: Engineering design standards for arterial and collector highways shall give priority to safety over other factors.

3.5 AN INTEGRATED, MULTI-MODAL TRANSPORTATION SYSTEM

Goal CT-5: It shall be a goal of the County to encourage development of a balanced and integrated multi-modal transportation system which will allow for alternative means of travel and opportunities for easy and convenient transfer between alternative modes.

Objective CT-5.1: It is Sonoma County's objective that public transit services be accessible to residents and major employment centers in all portions of the county, with particular emphasis on service expansion in the Highway 101 corridor between Petaluma and Windsor.

Objective CT-5.2: It is the County's objective that future transportation patterns have a reduced dependence on private automobile travel and increased ridership on public transit systems.

Objective CT-5.3: It is the County's objective that regional and express-route transit services be coordinated with local transit services and parking facilities in a manner that facilitates transfers between modes and transit routes.

Objective CT-5.4: It is the County's objective that rail freight service not be abandoned on the Northwestern Pacific Railroad (NWPRR) through Sonoma County and northward and that the railroad right-of-way continue to be maintained for freight operations.

The County shall utilize the following policies:

CT-5a: Local transit routes and services within the Petaluma - Windsor corridor should be designed to provide feeder transit service to connect with inter-county and inter-city routes at major transfer points or "transportation centers" in Santa Rosa, Petaluma, Rohnert Park, Cotati, and Windsor.

CT-5b: Planning of transportation facilities and services within the county shall be coordinated among the various cities, the County, and other service providers through the established Transportation Planning Council.

CT-5c: Sonoma County shall continue to participate in forums involving the various local governments in Sonoma and Marin Counties, Caltrans, the Bridge District, MTC, and other agencies, which are intended to evaluate and propose solutions to regional transportation problems within the Northbay area.

CT-5d: The County shall work with other transit operators to allow reduced-fare transfers between the various local and intercity bus systems and to coordinate schedules, services, and fares.

CT-5e: The County shall oppose abandonment of freight service by the NWP Railroad and the sale or other disposition of the railroad right-of-way which would preclude the continuation of freight operations through Sonoma County northward to Willits.

4.0 HIGHWAY SYSTEM POLICIES AND STANDARDS

4.1 POLICY ISSUES

Issues affecting the highway system plan include three major groups: 1) the relative emphasis and priority that should be given to expansion of the capacity of the 101 freeway versus expansion of capacities of the parallel arterial system; 2) the extent to which highway capacities can feasibly be expanded in some areas due to existing development patterns, environmental factors, and the very high costs of constructing the improvements needed to accommodate projected future traffic; and 3) determination of the means of financing the costs of future roadway improvements, and the distribution of the cost burden between state/federal and local government, and at the local level between new development, highway users and residents generally.

4.2 GOALS AND OBJECTIVES RELATED TO THE HIGHWAY SYSTEM

Goal CT-6: It shall be a goal of the County of Sonoma to provide and maintain a highway system that has capacities that are adequate to accommodate projected travel demand by year 2005 at acceptable levels of service.

Objective CT-6.1: It is the County's objective that a "C" level of service on major highways, other than U.S. 101, be maintained to the extent practicable on an average daily and peak-period basis; in some circumstances, a "D" or "E" level-of-service may be acceptable for a short duration of time during peak commute periods.

Objective CT-6.2: It is the County's objective to: 1) establish a functional classification system for major highways; 2) express right-of-way and design standards for the classes which would result in appropriate highway capacities and performance characteristics; and 3) classify the various highways within the county and assess the general types of improvements that would be needed for each highway segment to accommodate its projected traffic volume with the desired performance characteristics.

Objective CT-6.3 It is the County's objective that rights-of-way be reserved for highways designated in the arterial and collector system and that land-uses and development that could preclude the timely acquisition of these lands for roadway purposes not be allowed to occur.

Objective CT-6.4 It is the County's objective that the burden of costs of roadway improvements be equitably distributed among property-owners/developers benefiting from new development and highway users, as well as to taxpayers generally.

Objective CT-6.5: It is the County's objective that approvals of new development be correlated with any roadway improvements that would be necessary to maintain a "C" level of service, a volume to capacity ratio of 0.79 or less, and other performance characteristics applicable to the classifications of the affected roadways and that development not be authorized until measures to construct any necessary improvements are in place.

Objective CT-6.6: It is the County's objective that the arterial highway system provide for convenient and efficient transport of goods and materials and that any potential adverse effects of such transport, such as noise, be mitigated.

4.3 HIGHWAY SYSTEM PLAN, POLICIES AND STANDARDS

Highway policy concepts, including the functional classification system, are illustrated in Figure CT-3; the designated principal county-wide arterial network is shown in Figure CT-4. A more-detailed plan map for each of the nine sub-county regions showing designated highways and improvements is included in Section 7.0 of this element.

Figure CT-3

Highway Plan Concepts

FUNCTIONAL CLASSIFICATIONS

Category	Function	Types of Standards
Freeway	Carry interurban, regional and interstate traffic	Number of travel lanes, controlled access, divided by median or barriers, grade-separated interchanges
Primary Arterial Secondary Arterial	Carry large traffic volumes over long distances; county-wide or regional importance; connect major traffic operators	Number of travel lanes, driveway spacing, signalization, parking restrictions, right-of-way width, roadway width
Major Collector Minor Collector	Carry local area traffic to the arterial system	Number of travel lanes, signalization, right-of-way width, roadway width
Local road	Provide access to property; carry local traffic	Number of travel lanes, right-of-way width

IMPROVEMENT CATEGORIES

Map Category	Category Name	Types of Improvements
A	"Upgrade/maintenance"	Safety improvements, curvature reductions, traffic control devices, minor pavement widening, resurfacing, intersection improvements/turn lanes
B	"Management"	Widening for continuous turn lanes, bridge widening, intersection improvements
C	"Major project"	Additional through travel lanes to expand capacity

LEVEL OF SERVICE (LOS)

Level	Traffic Condition
LOS "A"	• Free flow conditions • Low volumes • High operating speed • Uninterrupted flow • No restriction on maneuverability • Drivers maintain desired speeds • Little or no delays
LOS "B"	• Stable flow condition • Operating speeds beginning to be restricted
LOS "C"	• Stable flow but speed and maneuverability restricted by higher traffic volumes • Satisfactory operating speed for urban conditions • Delays at signals
LOS "D"	• Approaching unstable flow • Low speeds • Major delays at signals • Little freedom to maneuver
LOS "E"	• Lower operating speeds • Volume at or near capacity • Unstable flow • Major delays and stoppages
LOS "F"	• Forced flow conditions • Low speeds • Volumes below capacity, may be zero • Stoppages for long periods because of downstream congestion

4.3.1 The Highway 101 and Highway 12 Freeways

Two highways are designated as freeways by the plan: U.S. Highway 101 for its entire length from the Marin County line on the south to the Mendocino County line on the north and State Highway 12 from its intersection at Farmers Lane in East Santa Rosa to its intersection with Llano Road just east of the city of Sebastopol. The most important and heavily traveled corridor in the County, U.S. 101, is projected to have its highest volumes in Santa Rosa, with nearly 100,000 vehicles per day, while at the Marin County line daily volumes would be about 70,000 vehicles. As of 1984, this highway consisted of two travel lanes in each direction and was constructed to freeway standards for most of its length south of Cloverdale.

The following policies of the County of Sonoma shall be applicable to freeways:

CT-6a: Freeways are defined as through highways that are designed to carry large volumes of interurban, regional, and interstate traffic on limited-access roadways, although they may carry considerable local traffic in urban areas. The following design standards and criteria shall be applicable to freeways:

1) Freeways shall be designed to have two to four travel lanes in each direction.

2) Freeways shall be designed to separate travel lanes by a median strip or by some other form of traffic barrier.

3) Access to highways which are designated as freeways shall not be permitted from abutting parcels; however, access may be allowed prior to improvement of roadway segments to freeway standards if there is no alternative access route to a parcel.

4) Access to cross streets and roads shall be limited and shall be provided only by grade-separated interchanges.

5) Acceleration and deceleration lanes may be provided at interchages.

6) Auxiliary lanes may be provided from one interchange to another in densely developed urban areas which have closely-spaced interchanges, or where substantial travel demand exists between two consecutive interchanges.

7) The design capacity of a freeway at level of service "C" is approximately 12,500 vehicles per lane per day and 1,400 vehicles per lane per hour, although the capacity may vary with the characteristics and conditions existing in particular roadway segments.

CT-6b: U.S. Highway 101 shall be designated on the Circulation and Transit Plan Maps as a freeway for its entire length in Sonoma County; segments which are not currently constructed to freeway standards shall have high priority for improvement to those standards.

CT-6c: The Highway 101 freeway shall be planned to consist of three travel lanes in each direction from the Windsor River Road interchage in the Community of Windsor southward through Santa Rosa, Rohnert Park, and Petaluma to the Marin County line. Two lanes in each direction shall be planned north of Windsor.

CT-6d: The planned additional travel lane in each direction on Highway 101 shall be designed and constructed in a manner which will allow it to be dedicated to high-occupancy vehicles (HOV) and transit vehicles during peak commute periods. HOV lanes may be reserved from the Windsor River Road interchange southward to the Marin County line. Priority in construction of the additional lanes shall be: 1) Santa Rosa southward to Rohnert Park; 2) Rohnert Park southward to Petaluma; 3) Santa Rosa northward to Windsor; and 4) Petaluma southward to the Marin County line.

CT-6e: New interchanges and/or overpasses may be provided at the intersections of Highway 101 with the following crossroads: Rainier Street and Corona Road in Petaluma, Bellevue Avenue south of Santa Rosa, and Arata Lane on the north side of Windsor. Substantial improvements may be provided at the following interchanges: Washington Street in Petaluma, Hearn Avenue and Todd Road in South Santa Rosa, Airport Boulevard, Fulton Road, and Windsor River Road.

CT-6f: A U.S. 101 bypass shall be planned at Cloverdale and a new highway alignment northward to the Mendocino County line; these facilities shall be planned to consist of two travel lanes in each direction; interchanges may be provided with the existing 101 route north and south of Cloverdale and with an appropriate intermediate cross-street.

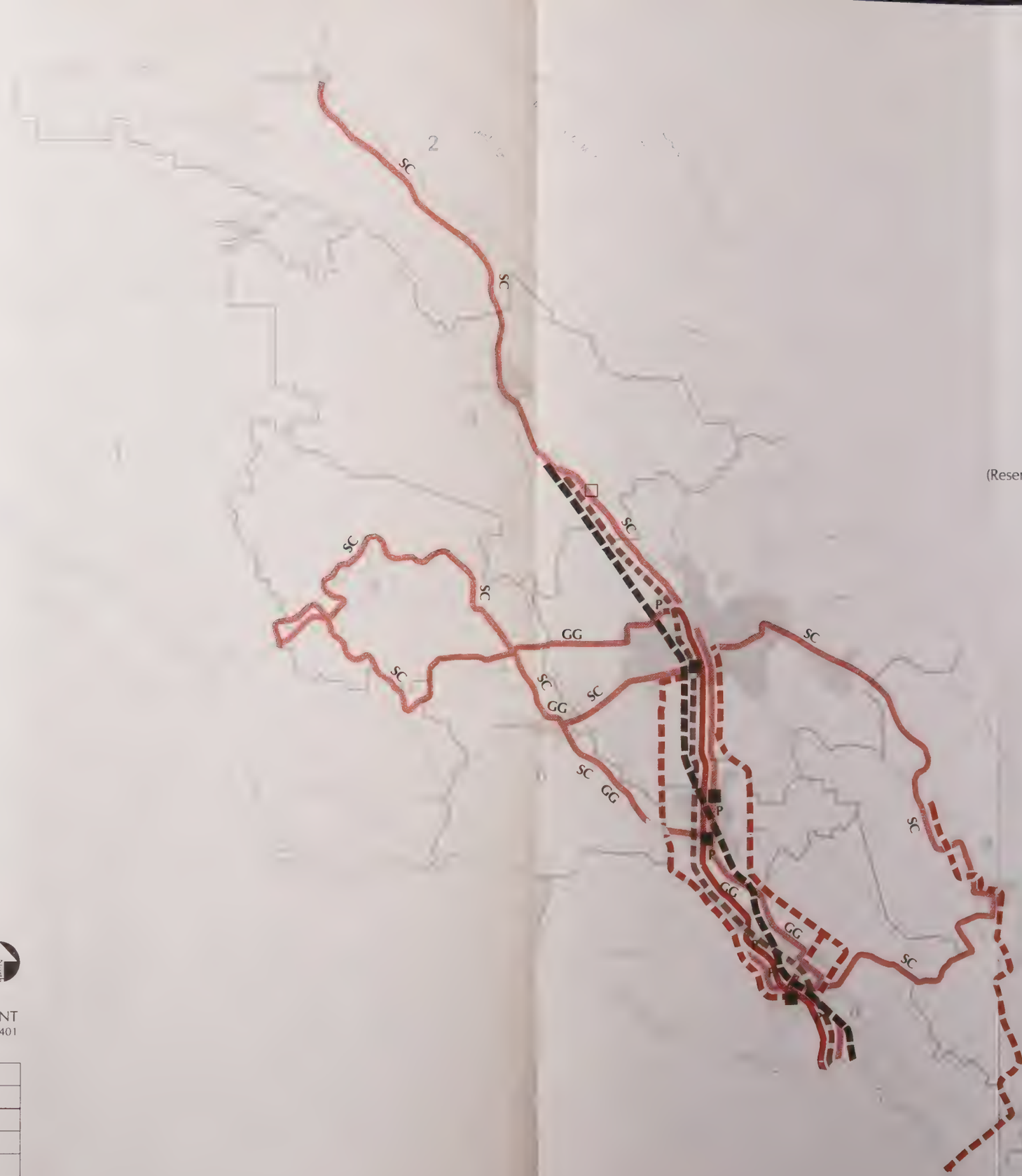
CT-6g: The following segment of State Highway 12 shall be designated on the Circulation and Transit Plan Maps as a freeway: from its intersection with Llano Road just east of Sebastopol to Farmers Lane in East Santa Rosa.

CT-6h: The Highway 12 freeway shall be planned to consist of two travel lanes in each direction.

Figure CT-6

COUNTYWIDE TRANSIT NETWORK PLAN: 2005

CIRCULATION AND TRANSIT ELEMENT



	Existing 1986	Proposed New
Exclusive Transit R.O.W. (N.W.P. Right-of-Way Reservation)	▬▬	▬ ▬
Transit Vehicle/HOV Lane (Reserved during Peak Commute Period)	▬▬	▬ ▬
Express Bus Routes	▬▬	▬ ▬
Principal Intercity Bus Routes	▬▬	▬ ▬
Transit Systems:		
Sonoma County Transit	SC	
Golden Gate Transit	GG	
Major Transfer Points	■	□
Park and Ride Lots	P	

Note: Additional local transit routes are provided service by Sonoma County Transit, Santa Rosa Transit, Petaluma Transit.

PLANNING AREA KEY

1. Sonoma Coast/Gualala Basin
2. Cloverdale/N.E. County
3. Healdsburg and Environs
4. Russian River Area
5. Santa Rosa and Environs
6. Sebastopol and Environs
7. Rohnert Park-Cotati and Environs
8. Petaluma and Environs
9. Sonoma Valley

KILOMETERS 0 4 8
MILES 0 5

NORTH

SONOMA COUNTY PLANNING DEPARTMENT
575 Administration Dr., Room 105A, Santa Rosa, CA 95401

Adopted by Board of Supervisors	
Date:	Resolution:
Amended by Board of Supervisors	
Date:	Resolution:

CT-6i: New interchanges may be provided at the intersections of Highway 12 with the following crossroads: Fulton Road, Stony Point Road, Brookwood Avenue, and Farmers Lane.

CT-6j: Reconstruction of the segment of Highway 12 at the Sonoma County Fairgrounds to freeway standards shall be planned; an extension from its current terminus at Farmers Lane to Summerfield Road shall be planned for two travel lanes in each direction.

4.3.2 The Parallel Arterial system in the Petaluma-Windsor Urban Corridor

Several roadways comprise a part of the Highway 101 corridor system and are of special importance to Sonoma County's future highway network. The Stony Point-Fulton Road arterial on the west side of Highway 101 and the Adobe Road/Petaluma Hill Road/Old Redwood Highway arterial on the east side would provide an opportunity, following significant improvements, to carry medium-distance intra-county commuters which would be diverted from Highway 101 during peak-period traffic congestion. The alignments of these special arterials provide convenient access to existing and planned future employment centers. On the west side, Stony Point/Fulton would provide access to the growing North Petaluma, Industry West, Santa Rosa Air Center, Northwest Santa Rosa, and Airport Boulevard industrial areas; on the east side, Adobe Road/Petaluma Hill Road/Old Redwood Highway would provide convenient access to expanding employment centers in East Petaluma, East Rohnert Park, the Fountaingrove area of Santa Rosa, and Windsor.

The following County policies are applicable to the parallel arterial system:

CT-6k: It is the County's intent that the parallel arterials in the 101 corridor be planned, designed, and constructed in such a manner as to create alternative routes which could attract a significant share of medium-distance commuters from Highway 101 during peak-periods of travel.

CT-6l: Although traffic modelling indicates that four lanes may not be needed by year-2005, because of the special importance attached to alternative routes to Highway 101, rights-of-way that would accommodate four travel lanes shall be reserved; the desired right-of-way width for parallel arterials is 90 feet.

CT-6m: The following design standards and criteria shall be applicable to parallel arterials:

1) the number of through travel lanes may vary from two to six as indicated on Figures CT-7c, 7e, 7g and 7h, depending on the projected traffic volumes at particular locations.

2) access to parallel arterials from abutting parcels shall be discouraged and shall not be permitted if reasonable access is possible to another public road; driveway consolidations shall be encouraged. Parking along parallel arterials shall not be permitted during peak travel periods.

3) turning lanes and deceleration/acceleration lanes shall be provided at intersections with highways designated as arterials and collectors, and are desirable at other intersections. Any signalization shall give priority to the parallel arterial rather than the cross-road.

4) desirable pavement widths shall be established based on 12 feet per travel lane, 12 feet per turn lane, and 8 feet for each shoulder; if bikeways are to be provided, an additional 4 feet minimum of pavement would be required in each direction.

5) desirable right-of-way widths shall be 90 feet.

6) commercial uses on parcels abutting a parallel arterial including travel-related services, shall be limited to uses existing as of 1986, except within the boundaries of urban service areas as designated on the land-use plan maps.

7) the design capacity of a parallel arterial at level of service "C" is approximately 6,000 vehicles per lane per day and 650 vehicles per lane per hour, although the capacity may vary with the characteristics and conditions existing in particular roadway segments.

4.3.3 The Primary and Secondary Arterial System

Arterials are major through highways which carry large volumes of traffic over relatively long distances. Their traffic function is of county-wide or sub-regional importance, rather than serving primarily local area traffic. The two classifications employed by the plan, "primary" and "secondary" arterials, are intended to distinguish differences in the volume of traffic carried and/or differences in the average length of trips.

The following policies shall be applicable to designated arterial highways:

CT-6n: Primary arterials shall be defined as highway routes which are intended to carry large volumes of intercity travel, although they may serve large amounts of local traffic as well within urban areas. Priority for these highways is placed on the traffic function rather than on access to property. The following design standards and criteria are applicable to "primary arterials":

1) the number of travel lanes may vary from two to six, as indicated on Figures CT-7a through CT-7i, depending on the projected traffic volumes at particular locations and the extent of any existing development which may constrain expansion of the highway.

2) access to primary arterials from abutting parcels may be allowed but shall be secondary to protection of the traffic function of the highway; consolidation of driveways shall be encouraged. Parking along primary arterials may be allowed but in general is discouraged, especially during peak travel hours.

3) continuous left turn lanes may be provided in urban locations; turning lanes shall be provided at intersections with other designated arterial and collector highways wherever practicable; any signalization shall give priority to traffic flow on the arterial.

4) desirable pavement widths shall be established based on 12 feet per travel lane, 12 feet per turn lane, and 8 feet for each shoulder; if bike lanes are provided, an additional 4 feet of pavement would be required in each direction.

5) in rural areas, desirable right-of-way widths shall be 60 feet for two-lane roadways, 72 for three-lane, and 84 for four-lane roadways; additional right-of-way may be required at some intersections; the equivalent right-of-way widths may be less in urban service areas.

6) within urban service areas, urban improvement standards may be required, including curb and gutter, sidewalks, landscaping and fencing, and streetlights. Sidewalks shall be at least five feet wide.

7) The design capacity of a primary arterial at level of service "C" is approximately 5,000 vehicles per lane per day and 600 vehicles per lane per hour, although the capacity may vary with the characteristics and conditions existing in particular roadway segments.

CT-6o: Secondary arterials shall be defined as highway routes that are intended to carry volumes of traffic that may be slightly less than primary arterials or over distances which are shorter. Within urban areas, these highways may interconnect locations with large-scale traffic generators and carry somewhat higher proportions of local traffic. Although access to abutting land is permitted, priority is given to the traffic function of the roadway. The following design standards and criteria are applicable to secondary arterials:

1) the number of travel lanes may vary from two to six, as indicated on Figures CT-7a through CT-7i, depending on the projected traffic volumes at particular locations and the extent of any existing development which may constrain expansion of the highway.

2) access to primary arterials from abutting parcels may be allowed but shall be secondary to protection of the traffic function of the highway; consolidation of driveways shall be encouraged.

3) continuous left turn lanes may be provided in urban locations; turning lanes shall be provided at intersections with other designated arterial and collector highways wherever practicable; any signalization shall give priority to traffic flow on the arterial.

4) desirable pavement widths shall be established based on 12 feet per travel lane, 12 feet per turn lane, and 8 feet for each shoulder; if bike lanes are provided , an additional 4 feet of pavement would be required in each direction.

5) in rural areas, desirable right-of-way widths shall be 60 feet for two-lane roadways, 72 for three-lane, and 84 for four-lane roadways; additional right-of-way may be required at some intersections; the equivalent right-of-way widths may be less in urban service areas.

6) within urban service areas, urban improvement standards may be required, including curb and gutter, sidewalks, landscaping and fencing, and streetlights.

4.3.4 Major and Minor Collector Highways

Collector highways primarily serve internal traffic within a local sub-county area and carry this traffic to the arterial system. Collector highways do not ordinarily carry a high proportion of long through trips and are not, of necessity, continuous for great lengths. In urban areas, collectors may carry volumes in excess of 10,000 vehicles per day; minor collectors occur primarily in rural areas where traffic volumes are lower but the average lengths of trips are longer.

The following policies shall be applicable to collector highways designated on Figures CT-7a through CT-7i:

CT-6p: Collector roadways shall be defined as highway routes which are intended to carry the internal traffic of a local area from the local road system to arterial highways. Collector roadways may also serve to provide access to property, especially in rural areas. The following standards and criteria are applicable to both major and minor collector roadways:

1) the number of travel lanes is usually two but may be up to four, as designated on Figures CT-7a through CT-7i, depending on the projected traffic volumes at particular locations.

2) access shall be permitted from abutting parcels; on-street parking may be allowed.

3) in urban areas, signalization may be provided at some intersections, especially with arterial routes.

4) desirable pavement widths in urban areas shall be based on 12 feet per travel lane, 12 feet per turn lane, and eight feet for each shoulder; if bike lanes are provided, an additional 4 feet of pavement would be required in each direction.

5) collector roads located in rural areas and that have very low projected traffic volumes may be constructed to a lesser standard than expressed in item 4) above.

6) desirable right-of-way widths shall be 60 feet for two-lane roadways, 72 for three-lane, and 84 for four-lane roadways; additional right-of-way may be required at some intersections.

7) within urban service areas, urban improvement standards may be required, including curbs and gutters, sidewalks, landscaping and fencing, and street lights.

4.3.5 Local Roads

The function of local roads is to provide access to adjacent land and to carry traffic to collector highways. Within large development projects, these roadways may be constructed by the project developer and dedicated to the County. Local roads make up a large percentage of the county's total roadway mileage but carry a small proportion of the total vehicle-miles of travel.

The following policies are applicable to local roads:

CT-6q: Local roads shall be defined as those county-owned roadways which are intended to provide access to parcels of land and to carry local traffic to collector highways. The following standards and criteria are applicable to local roads:

1) the number of travel lanes is usually two, but may be only one in some remote roadway segments and on some rural bridges.

2) local roads shall be designed in a manner that provides for reasonable access by emergency and service vehicles.

3) horizontal and vertical road alignments should correspond to natural topography insofar as is practicable, and should be located to minimize grading.

4) layout of local roads and streets should be planned to avoid adverse concentration of stormwater runoff.

5) desirable right-of-way width is 50 feet for local roads.

6) within urban service areas, urban improvement standards may be required, including curbs and gutters, sidewalks, and street lights.

4.3.6 General Policies Related to Highways

All segments of designated freeways, arterials, and collectors have been classified as to the level of improvement required to accommodate projected future traffic by year 2005. These proposed improvements and other policies which apply in general to the highway system are expressed in this section.

CT-6r: Proposed improvement projects on existing roadway facilities for the purpose of maintaining or improving traffic safety but not of increasing capacity are referred to as "upgrade/maintenance" projects and are indicated as improvement category "A" on the highway system plans for the nine regions, shown in Figures CT-7a through CT-7i. For intersections, these improvements may include traffic control and safety devices, minor pavement widening for curvature reduction, and an initial left and/or right turn lane. For midblock roadway segments, upgrading encompasses safety-related pavement widening (e.g., for bike lanes or curvature reduction), installation of traffic safety devices (e.g., guard rails), and resurfacing.

CT-6s: Proposed improvement projects on existing roadway facilities for the purpose of creating a moderate increase in traffic capacity are referred to as "management" projects and are indicated as improvement category "B" on the highway system plans shown in Figures CT-7a through CT-7i. For intersections, these improvements may include widening for additional (not initial) left and/or right turn lanes and stacking lanes. For midblock roadway segments, management projects may include widening for a continuous two-way left turn lane (but not additional through-travel lanes), and bridge widening (without new through-lanes).

CT-6t: Proposed improvement projects on existing roadway facilities which involve construction of additional travel lanes for the purpose of substantially increasing the capacity of the roadway shall be referred to as "major" projects and are indicated as improvement category "C" on the highway system plans shown in Figures CT-7a through CT-7i.

CT-6u: Ordiances may be adopted by the County to establish plan lines for designated arterial and collector highways; specific plans may also be utilized to establish plan lines which are based upon specified distances from the center lines of existing roadways. In either method, new structures shall not be authorized to be constructed within the area of the plan line and required setbacks shall be measured from the plan line boundary rather than the parcel boundary.

CT-6v: Various measures may be employed by the county to establish sources of revenue to finance roadway improvement and construction projects. These measures include but are not limited to the following:

1) Ordinances may establish development fees and/or traffic mitigation requirements which are applicable to planning and/or building permits for projects located within the area encompassed by a specific plan or any other appropriate sub-area of the county.

2) Special Benefit Assessment Districts may be established to finance construction of roadway improvement projects which primarily serve or benefit an identifiable local area.

3) The County may cooperatively participate along with the eight cities in the preparation of a "County Transportation Expenditure Plan" and related ballot measure as authorized by SB 878 (Boatright). This act authorizes each of the nine Bay Area counties to levy, upon approval by a majority of the voters, a sales tax increase of 0.5 percent to 1.0 percent to be used for public transit, state highway, or local street and road projects based on a County Transportation Expenditure Plan.

5.0 TRANSIT SERVICE POLICIES AND LONG-RANGE PLAN

The focus of the transit plan is on general policies and the long-term configuration of transit routes and their relationship to the planned pattern of land-uses, rather than on short-term operational characteristics. In this regard, the Circulation and Transit Element is intended to supplement the Five-year Transit Development Plans prepared by Sonoma County Transit and other

transit operators pursuant to Section 8 of the Urban Mass Transit Act of 1964, as amended. The emphasis of the plan is on transit infrastructure -- fixed capital facilities such as terminals, stops, maintenance facilities, rights-of-way, and similar facilities.

The intent of the plan is to express policies that will contribute to the coordination of transit services and to development of a timed transfer system wherein the transit network would include a small number of focal points or transit centers at which various routes meet. Headways, schedules, and other operating characteristics would be designed in a manner to facilitate transfers and allow reasonable convenience and average travel speed between any two points in the served-area rather than just along individual routes. The plan contemplates three different roles for public transportation: 1) provision of basic mobility for those individuals without access to automobiles or who are otherwise transit-dependent; 2) provision of an alternative means of travel for people, especially peak-period commuters, who have access to automobiles but prefer transit if reasonably competitive levels-of-service are offered; and 3) provision of back-up service for individual riders at times when their automobile is not available.

5.1 POLICY ISSUES

The principal issues with regard to long-term transit planning include the question of technical and financial feasibility, as well as the desirability, of establishing a transit guideway along the NWPRR or Highway 101 rights-of-way, and the appropriate transit technologies to be considered. Suggested alternatives have ranged from a conventional roadway reserved for buses to commuter trains, "light-rail" and conventional high-speed "heavy rail" systems. Analyses have focused on the pattern of commute travel within and between Sonoma and Marin counties and the potential effectiveness of various transit alternatives in accommodating long- and intermediate-distance work trips. Concerns have been expressed about the residential growth-inducing potential of fixed-route, line-haul mass transit systems which operate on exclusive rights-of-way. Other issues pertain to determination of the mode share that is realistic for transit given the existing and planned land-use pattern, and the appropriate numbers and locations of express and other intercity bus routes to serve this potential demand.

By its nature, public transportation operates most efficiently where there is a certain aggregation of travel demand associated with areas of higher-density development. In areas with very low urban or rural density, such as is found in many locations throughout Sonoma County, transit operators ordinarily find it difficult to provide an acceptable level of service at a reasonable cost.

5.2 TRANSIT SYSTEM LONG-RANGE GOALS AND OBJECTIVES

Goal CT-7: It shall be a goal of the County to provide, in association with other regional and local transit agencies, transit routes and services that are responsive to the future needs of inter-county and inter-city commuters within Sonoma County, as well as the needs of the transit-dependent population.

Objective CT-7.1: It is the County's objective that the share of home-based work or commute trips taken by public transit increase to approximately 5.0 percent of the total of such trips by year-2005, including about 2.5 percent by regional and intercity transit.

Objective CT-7.2: It is the County's objective that the Northwestern Pacific Railroad (NWPRR) right-of-way paralleling the Highway 101 freeway be reserved, in the event of termination of commercial freight service, for potential future use after year-2005 as an exclusive right-of-way for a line-haul mass transit system.

Objective CT-7.3: It is the County's objective to coordinate regional and inter-city express bus routes with each other and with local bus routes through establishment of a series of "transit centers" or transfer sites at the following locations within the Highway 101 urban corridor: Central Petaluma, The Cotati Hub, Rohnert Park, Central Santa Rosa, North Santa Rosa, and Windsor.

Objective CT-7.4: It is the County's objective to provide fixed-route, scheduled bus services which will have convenient access to all major centers of population and economic activity, including areas with concentrations of high-density and mobile-home housing, retail centers, employment centers, large educational institutions, health care institutions, recreation areas, and areas with large concentrations of transit-dependent population groups such as the elderly.

Objective CT-7.5: It is the County's objective that transit routes, headways, schedules, fares, and other operational characteristics be designed in a manner that facilitates connections or transfers among the various transit routes and systems, especially during peak commute periods.

Objective CT-7.6: It is the County's objective that transit services be provided in an efficient and cost-effective manner and that a system-wide farebox recovery ratio of approximately 25 percent be maintained.

Objective CT-7.7: It is the County's objective that new or additional transit services -- such as route extensions, new routes, express service and greater frequency of service -- be provided in a timely but cost-effective manner which is responsive to growth patterns and resulting potential transit demand.

5.3 PUBLIC TRANSIT POLICIES

Policy concepts for the public transportation system are illustrated in Figure CT-5; the designated principal county-wide transit network is shown in Figure CT-6. A more-detailed map for each of the nine sub-county regions showing existing and proposed inter-city and regional transit routes is included in Section 7.0 of this element. Transit policies are organized into the following

Figure CT-5

Transit Plan Concepts

TYPES OF TRANSIT SERVICES AND TRANSIT OPERATORS

Service Type	Characteristics	Transit Operators
Inter-county Commute Service	Weekday line-haul service centered to peak period; express routing; may be on shared or separate right-of-way. May serve Trans-bay (S.F.) and Marin employment centers.	Golden Gate Transit
Basic Regional Service	Daily service, including weekends; serves variety of destinations; all-day service; fixed routes and schedules.	Golden Gate Transit Mendocino Transit Authority
Intra-county Service	Basic transit and commute transit between cities and/or communities within Sonoma County; express service during commute; fixed routes and schedules.	Sonoma County Transit
Local Area Service	Routes confined to a single urban area; fixed routes and schedules.	Santa Rosa, Petaluma, Cloverdale, Healdsburg and Sebastopol Municipal Transit Systems; Sonoma County Transit
Paratransit Service	Door-to-door service; unscheduled; subscription transit services.	Private companies and agencies

FIXED CAPITAL FACILITIES/OPERATING ELEMENTS

Fixed Facilities

- Exclusive rights-of-way/guideways for transit vehicles
- Transfer or "Transit Centers"
- Bus Turnouts
- Passenger Shelters
- Park-and-Ride Lots
- Maintenance and Administrative Facilities

Operating Elements

- Routes and Route Networks
- Frequency of Service/Headways
- Schedules
- Fares

five subject areas: 1) reservation of the NWPRR right-of-way for potential future exclusive use as a transit guideway; 2) construction of new HOV/Transit or "commute" lanes on Highway 101 from Windsor to the Marin County line; 3) regional and inter-county bus routes; 4) inter-city bus routes within Sonoma County; and 5) local urban area transit and paratransit services.

5.3.1 Reservation of the NWPRR Right-of-Way for a Future Transit Guideway

The Northwestern Pacific Railroad (NWPRR) right-of-way parallels the Northbay transportation corridor's major facility, U.S. Route 101, for its entire length from Larkspur Landing in Corte Madera (Marin County) northward through Petaluma, Rohnert Park and Santa Rosa to the Sonoma-Mendocino County line above Cloverdale. Although rail freight service continues to be provided by NWP in Sonoma County and northward, rail service has been abandoned on the facility through most of Marin County. In 1983, Marin County began the preparation of a transportation study and plan for the corridor through Sonoma, Marin, and San Francisco counties, utilizing an informal cooperative arrangement between the various local governments in the corridor as well as transit agencies, the Metropolitan Transportation Commission (MTC), and Caltrans. Phase I of the study, completed in 1985, indentified a "preferred alternative" that consisted of various potential component projects rather than an integrated transportation plan. Phase II, which was underway in 1986, was designed to define a more precise and integrated transportation plan and implementation program for the corridor. The alternatives being evaluated included acquisition of the NWPRR right-of-way for the purpose of developing a line-haul transit system of a generic or unspecified technology; potential technologies to be evaluated included an exclusive HOV/bus guideway, commuter rail, "light rail", and "heavy rail" rapid transit systems.

Although this general plan does not contemplate that the NWPRR right-of-way in Sonoma County would be used for commuter transportation by year 2005, it places high priority on transportation projects that would reduce dependence on automobile travel. In order to attract sufficient ridership, a fixed-route, line-haul transit system would have to furnish service with cost, speed, and operational convenience that are competitive with private automobile travel. The feasibility of such a system in the long-term, after year 2005, would likely be dependent upon continued growth in the Northbay corridor and a re-orientation of growth patterns to achieve concentrations of high density residential and commercial development in close proximity to transit stations.

The 101 Corridor Study (Phase I) and the General Plan Transportation Study both indicated that the conditions necessary to make such a line-haul transit system feasible within Sonoma County are not likely to be realized by year 2005. These studies indicated, however, that the option of future use of the NWPRR corridor for commuter transportation purposes after year 2005 should be retained. The following factors, however, were decisive in excluding the NWPRR component from the plan for year 2005:

- the total volume of long-distance commute trips within Sonoma County is not projected to be sufficiently high by year 2005 to make a fixed-route, line-haul, mass transit system economic, cost-effective, or technically efficient.

- the potential for a transbay mass transit connection, via a tunnel or second deck to the Golden Gate Bridge, does not appear to be feasible, thus limiting the suitability of a line-haul system for San Francisco commuters -- the most obvious market segment for such a system.

- the extraordinarily high capital costs and initial investment required for a fixed-route, line-haul, mass transit system in comparison with other alternatives.

- the increasingly dispersed pattern of work destinations within the 101 corridor, such that no one employment center accounts for a very large proportion of the total work trips in the corridor.

- the continued pattern of low-density, dispersed residential growth, and the resultant dispersal of the origins of home-to-work trips.

The following policies of the County are applicable to the NWPRR right-of-way:

CT-7a: The County of Sonoma shall encourage that rail freight service be continued on the portion of the NWPRR right-of-way within its borders through year 2005.

CT-7b: In the event that rail freight service from Sonoma County northward is abandoned in the future and the right-of-way is to be disposed of, the County shall place priority upon its acquisition by, or donation to, the County or other appropriate governmental entity for some future public use. Potential public uses could include development of a guideway for buses and HOVs, a guideway for some other line-haul transit technology, or a bikeway.

CT-7c: The optimum future use of the NWPRR right-of-way for public transportation purposes shall be resolved within the context of the corridor-wide Highway 101 Study so that an integrated and mutually-supportive set of transportation projects may be defined for the various segments of the corridor in Sonoma and Marin Counties.

5.3.2 Construction of HOV / Transit Lanes on Highway 101

High Occupancy Vehicle (HOV) lanes are created by designating one travel lane in the direction of the peak flow to be restricted to vehicles occupied by three or more persons and to transit vehicles. These restrictions ordinarily are applicable during a period of several hours in the morning and afternoon

peak commute periods and the lane is available for mixed-flow traffic during other hours. The intent of HOV lanes is to reduce the number of vehicles traveling during peak commute periods by increasing the use of carpools, vanpools, and public transit. The HOV lane provides an incentive for these actions by allowing very rapid travel for the preferred vehicles so that travel times are more than competitive with individual automobile travel. Results of transportation modelling indicated that HOV lanes could reduce the number of vehicles traveling southward at the Marin County line during the morning peak commute period by about 700.

The following policies of the County are applicable to HOV/transit lanes on U.S. Highway 101:

CT-7d: An additional travel lane in each direction on Highway 101 from the Windsor River Road interchange southward to the Marin County line shall be planned, designed, and constructed in a manner that will make it suitable for reservation for high-occupancy and transit vehicles in the direction of the peak-period traffic flow. High-occupancy vehicles shall be defined as those occupied by three or more persons. HOV lanes shall be made available for mixed-flow traffic during non-peak periods.

CT-7e: Following construction of the additional travel lane on Highway 101, the timing of its reservation for HOV/transit vehicles within particular segments of the highway facility shall be based upon the volume of traffic flow and level-of-service during the peak commute periods. Reservation for HOV/transit vehicles may be limited to segments of the facility rather than its entire length, depending upon traffic conditions. Initial reservation for HOV/transit vehicles may be on a demonstration basis for a trial period, in order to evaluate its effectiveness and its efficiency in accommodating the total peak-period travel demand.

CT-7f: Reservation of HOV/transit lanes on the Highwy 101 facility shall be accompanied by additional measures to encourage carpooling and transit use and by increased frequency of express transit service on Highway 101 bus routes.

5.3.3 Regional and Inter-county Express Bus Services

Basic regional transit service is defined as general purpose bus service which ordinarily operates throughout the day and week and provides connections between Sonoma and other counties, serving a variety of types of destinations. In contrast, express or commute bus service provides access to major employment centers, is oriented toward long- and intermediate-distance out-of-county work trips and ordinarily consists of relatively frequent service limited to just the peak commute periods. The number of stops is usually kept to a minimum on

express routes in order to reduce travel time, and it is assumed that many users will drive from their residences to stops or parking facilities. "Park-and-Ride" facilities are usually provided at major stops or transit centers. Transportation modelling indicated that regional and inter-county express service could reach a ridership of about 4,100 passengers on an average weekday by year 2005. The equivalent annual patronage by year 2005 would be approximately 1,100,000 passengers, compared to an estimate of about 600,000 in 1986. As of 1986, Sonoma to San Francisco commuters had a high rate of transit ridership, while Sonoma to Marin commuters generally traveled by automobile.

The following policies of the County are applicable to regional and inter-county express bus service:

CT-7g: The County of Sonoma shall continue to support the provision of regional and commute bus service by Golden Gate Transit from Sonoma County to employment centers in San Francisco and northern and central Marin County. Services are provided over the following routes:

1) basic regional service (Route 80) between Santa Rosa, Rohnert Park, and Petaluma and points in Marin County and San Francisco.

2) trans-bay commute service (Routes 74,76,78) between Santa Rosa, Sebastopol, Rohnert Park, Cotati, and Petaluma and San Francisco, with a limited number of intermediate stops in Marin County.

CT-7h: Additional commute service routes to extend the served-area within Sonoma County shall be encouraged, provided that projected ridership and service costs would result in efficient and cost-effective transit service. Additional transbay commuter service included in the plan for future consideration consists of the following:

1) additional bus service to extend route coverage to growing residential and commercial areas in East Petaluma in the vicinity of Ely Boulevard and Casa Grande.

2) establishment of a new route to extend fixed route, transbay commute service to the Sonoma Valley, providing access to the City of Sonoma and unincorporated areas such as Boyes Hot Springs/El Verano, Glen Ellen, and the Sonoma State Hospital.

CT-7i: Greater frequency of service and express commute service shall be encouraged along the various inter-county routes as ridership levels and cost factors warrant; "club bus" group transit, wherein buses or vans are arranged for groups of commuters from a local area through contracts with independent operators, are encouraged wherever practicable and cost-effective.

CT-7J: In order to reduce peak-period congestion on Highway 101, Sonoma-Marin commute bus service may be provided as employment centers in northern and central Marin County continue to grow and the number of Sonoma County residents commuting to Marin County increases. In concept, the routes within Sonoma County would begin revenue service at the Santa Rosa depot and travel via Highway 101 with intermediate loops into Rohnert Park and Petaluma; in Marin, routes would serve Novato, North San Rafael, and Central San Rafael. At the residential end, commuters would reach transit lines by automobile; additional park-and-ride lots at the major transit stops would be an integral feature of such service in order to attain sufficient patronage.

CT-7k: Basic fixed-route transit service shall be encouraged to be provided from points along the Sonoma Coast to Santa Rosa; the County may continue to contract this service with the Mendocino Transit Authority, as long as patronage levels and costs make such service reasonably cost-effective.

5.3.4 Inter-city Transit Service Within Sonoma County

Inter-city bus routes within Sonoma County include basic and commute transit services. As of 1986, Sonoma County Transit provided fixed-route, scheduled bus service that linked the eight cities and major unincorporated communities, with the served-area extending from Cloverdale to Petaluma and from Sonoma to Duncans Mills. The major system facilities or elements include a network of bus routes, which totaled 12 in 1986; stops and bus turnouts, with well over 800 designated as of 1986; schedules and service frequencies, or headways; major transfer points or "transit centers"; park-and-ride lots; and maintenance facilities. Policy expressed in this plan is confined to the strategic and long-term aspects of the inter-city transit system, rather than its daily operational features.

The following policies are applicable to inter-city transit services within Sonoma County:

CT-71: Sonoma County Transit (SCT), a division of the Sonoma County Public Works Department, shall be the primary agency responsible for providing and coordinating inter-city transit services. SCT shall be responsible for the coordination of its routes, schedules, fares, and other operational features with Golden Gate Transit and the various municipal operators in a manner that facilitates transfers between the various transit systems, especially during commute periods.

CT-7m: SCT shall provide a system of bus routes that is responsive to the needs of inter-city commuters as well as transit dependent population groups and persons with mobility impairments. Route alignments shall be selected to provide convenient access to major employment centers, retail and recreational areas, high- and medium-density residential areas, and major health-care and educational facilities.

CT-7n: New inter-city bus routes shall be added to the transit network, when justified by projected ridership or patronage levels, in a manner which is responsive to growth patterns. In order to attain acceptable cost-effectiveness, new service should ordinarily have a minimum demand of 15 passengers per vehicle-hour and a farebox recovery ratio of at least 10 percent. The following potential new routes are included in the plan:

1) new express service from Santa Rosa to the Sonoma Valley, with stops in Kenwood, Glen Ellen, Sonoma State Hospital, Boyes Hot Springs, Sonoma, and Temelec.

2) direct service from Santa Rosa to the Russian River Area along River Road and Highway 116.

3) express commuter service between Santa Rosa and Petaluma, with one route over Stony Point Road and another over Petaluma Hill Road/Ely Road.

4) in event GGT pulls back its regional service and SCT assumes responsibility for inter-city transit linking central Sonoma County with Petaluma, additional service may be provided by SCT along Highway 101 from Santa Rosa to Petaluma, where southbound connections would be made to GGT routes for the Marin/San Francisco commute.

5) commuter service connecting the Windsor/Airport Boulevard/ Larkfield area and the Southwest Santa Rosa/Industry West/West Rohnert Park areas. Service might be extended northward as far as Healdsburg.

CT-7o: In addition to new routes, other service improvements may be instituted in a manner commensurate with the county's growth as they are justified by patronage levels and cost factors. These service improvements include:

1) greater frequency of service along individual bus routes and associated reduction in headways.

2) expansion of hours of operations on individual bus routes.

3) expanded express or commuter service along principal commute corridors during peak periods.

4) route extensions to provide bus service to previously unserved areas which have experienced significant residential or commercial growth.

CT-7p: The SCT route configuration, schedules, and fare structure shall be designed to facilitate transfers between routes and systems at "transit centers" in the following areas: the Petaluma depot, the Cotati Hub, Rohnert Park, Central Santa Rosa, North Santa Rosa, and Windsor.

5.3.5 Local Urban Area Transit Services and Para-transit

Local transit services are defined as fixed-route bus or jitney service within an individual city and its immediate environs. As of 1986, these services were provided by municipal operators in Santa Rosa, Petaluma, Cloverdale, Healdsburg Sebastopol and in Rohnert Park-Cotati by SCT through a contract with those cities. Para-transit services are provided by private as well as public operators, and consist of transportation services that are adjusted to the needs of a limited number of subscribers or users and that are not characterized by regular, fixed-route and fixed-schedule service. Para-transit includes such concepts as "dial-a-ride", vanpools, and subscription bus service. Approximately 30 such services were available in Sonoma County as of 1986.

The following policies of the County are applicable to local transit services and to para-transit:

CT-7q: Local transit services supplement and are complementary to inter-city transit and are encouraged to be provided within incorporated areas by municipal or municipally-contracted operators. SCT may contract with municipalities to operate local area bus service.

CT-7r: SCT shall design and operate its services in a manner that will complement rather than duplicate local urban area transit services. SCT's route network and schedules shall be designed to primarily accommodate the transportation needs of inter-city travelers, while municipal systems focus on travel needs which are internal to a particular urban area. Operational elements of the SCT system shall be designed to facilitate transfers to and accept transfers from the various municipal transit systems.

CT-7s: SCT may provide local area transit services in unincorporated urban areas; priority areas for such services include the Windsor and Russian River Areas.

CT-7t: The County of Sonoma encourages the provision of para-transit services in both unincorporated and municipal areas. The County encourages measures which will promote efficiency and cost-effectiveness in the provision of para-transit services; these measures include, among others, development of a joint-use para-transit maintenance and administrative facility.

5.3.6 General Policies Related to Transit Services

The following policies apply in general to all types of transit services:

CT-7u: It is the County's intent that transfer facilities or "transit centers" be established at focal points where various transit routes meet in Central Petaluma, the Cotati Hub, Rohnert Park, Central Santa Rosa, North Santa Rosa, and Windsor. The purpose shall be to allow operational features of the various systems to be designed so that, through transfers, reasonable service and travel times may be obtained between any two points in the transit network. Transit centers in general should be located so that: 1) re-routing is not required for approach by buses; 2) adequate off-street parking may be readily provided; 3) convenient access is provided for pedestrians from downtowns, shopping centers, or other activity centers; and 4) arterials with heavy traffic and congestion are avoided so as to reduce delays of transit vehicles. Wherever practicable, transit centers should be off-street and should include the following passenger services: fare collection, information, waiting rooms, restrooms, and telephones.

CT-7v: The physical layout and geometrics of arterial and collector highways shall be designed in a manner that is compatible with bus operations.

CT-7w: Developers of land development projects which include major traffic-generating activities shall be required to provide fixed transit facilities, such as bus turnouts and passenger shelters and seating, which are appropriate to serve anticipated or potential transit demand.

CT-7x: The County shall encourage and participate in joint efforts by the various transit operators to coordinate services. Measures to improve coordination may include:

1) reduction of route duplication

2) schedule coordination to increase transfer potential

3) joint transit fare prepayment, such as monthly passes, punch cards, ticket coupons, or magnetic debit card systems

4) joint marketing of transit services, such as standard signage, cross-referencing of schedules, print advertising, publication of a joint transportation guide, and so on

5) fare discounts for inter-system transfers.

CT-7y: In order to qualify for federal funding, SCT and the Sonoma County Transportation Planning Council shall continue to prepare annual 5-year transit plans which conform to guidelines established by UMTA and MTC. The County shall utilize to the maximum extent practicable all available sources of transit revenues, including the farebox, UMTA "Section 9" and "Section 18" funding, and State TDA and STA monies.

6.0 TRANSPORTATION SYSTEMS MANAGEMENT (TSM) POLICIES

Transportation Systems Management (TSM) is oriented towards increasing the efficiency of utilization of existing transportation facilities during peak periods of travel. TSM recognizes that large-scale investments in new highway and rapid transit systems or expansions of existing facilities are frequently limited by availability of financial resources, adverse community reactions, and/or other factors. TSM measures usually: 1) involve lower capital costs; 2) provide alternatives designed to modify travel demand; 3) may be implemented by both local governments and the private sector, including employers and developers; and 4) provide consideration of all travel modes. Since many TSM measures do not involve large capital investments in fixed facilities, they may be implemented within a short time-frame and evaluated quickly, rather than relying on long-term forecasts to assess effectiveness. The maximum amount that peak-period traffic may be expected to be reduced through mandatory TSM measures has been estimated generally to be in the range of five to ten percent.

6.1 POLICY ISSUES RELATED TO TSM

TSM measures are designed to reduce the number of vehicle trips, shorten trip lengths, and change the timing of trips so that fewer people will travel during peak commute periods. TSM also encourages wider use of transit, vanpools, car-pools, and other alternatives to the single-occupant automobile. Issues primarily relate to the potential effectiveness that may be expected from implementation of these measures and the amount of any reductions in peak-period traffic, especially when TSM actions are voluntary for employers. Questions include whether a TSM program should be voluntary or mandatory; and if mandatory, whether it should be applicable just to new development projects or to all employers over a specific size threshold. Issues also pertain to the particular focus of TSM and the relative emphasis to be placed on increased transit ridership versus higher vehicle occupancy and changes in the timing of home-based work trips by commuters. The extent of public acceptance of TSM

measures is unknown, as is the propensity of peak-period commuters to modify their travel behavior in response to such measures. Some TSM actions may inconvenience some members of the public -- individual-occupant automobile commuters, for example -- in order to reduce overall traffic congestion and improve system efficiency.

6.2 GOALS AND OBJECTIVES FOR TSM AND TRAFFIC MITIGATION

Goal CT-8: It is a goal of the County of Sonoma that its existing transportation facilities, especially highways, be more efficiently utilized, so as to: 1) reduce the amount of investment required in new or expanded facilities, 2) reduce the quantity of emissions of atmospheric pollutants from automobiles, and 3) increase the energy-efficiency of the transportation system.

Objective CT-8.1: It is the County's objective that transportation systems management actions achieve a five percent reduction in the number of single-occupant vehicles traveling during peak commute periods by year 2005.

Objective CT-8.2: It is the County's objective that responsibility for implementation of TSM actions be shared by the County, Cities, and the private sector, including developers of new projects and existing employers.

6.3 TSM AND TRAFFIC MITIGATION POLICIES

TSM policies are organized in five subject areas: 1) measures to divert auto trips to other modes, in particular bus transit; 2) measures to modify the timing of automobile travel so as to reduce the number of trips during the most congested periods; 3) measures to increase vehicle occupany; 4) mitigation fees for highway and/or transit improvements; and 5) general policy for private sector TSM/traffic mitigation.

TSM and traffic mitigation policies of the County are as follows:

CT-8a: Although not every work trip can be made on transit, TSM and traffic mitigation measures which divert automobile commute trips to transit are encouraged whenever it is reasonably convenient to commute by transit. Both private sector and local agency programs shall be encouraged as follows:

1) Programs or other actions by developers to encourage transit use to new development projects may include: design of site plans to allow for transit access; provision of bus turnouts and passenger shelters; provision of sidewalks between transit stops and buildings; street layouts and geometrics

which accommodate buses; provision of exclusive bus lanes; dedication of land for transit right-of-way or other facilities; establishment of "transportation stores" for tenants of business and industrial parks.

2) Programs or actions by employers to encourage transit use to existing employment centers may include: provision of a transit information center to provide route and schedule information and to coordinate with transit operators; on-site sale of transit tickets and passes; provision of shuttles to transit stations or stops; transit ticket subsidies for employees; provision of private or subscription transit service; establishment of parking fees and/or transportation allowances.

3) Programs or actions by local governments to encourage transit use may include: street and highway design and geometrics to accommodate transit vehicles; construction of bus turnouts and passenger shelters; provision of sidewalk access to transit stops; provision of park-and-ride lots; reservation of lanes on major highway facilities for transit use during peak commute periods; signal pre-emption for buses; construction of "transit centers" at major focal points in the bus route network.

CT-8b: In order to reduce highway congestion during peak commute periods and to utilize existing highway capacity more efficiently, TSM and traffic mitigation measures which increase the average occupancy of vehicles traveling during the peak period are encouraged and include both public agency and private-sector programs as follows:

1) Programs or other actions by employers and developers to promote higher vehicle occupancy during commute periods may include: establishment of vanpools or carpools; administration of ridesharing programs for employees; preferential parking for people who share rides; parking subsidies for rideshare vehicles; establishment of transportation coordinator positions.

2) Programs or actions by local governments and public agencies to encourage carpooling and vanpooling may include: preferential parking in municipal garages for rideshare vehicles; flexibility in parking requirements for new development projects; dedication of HOV lanes on major highway facilities during peak commute periods; preferential parking fees for rideshare vehicles; residential parking permit restrictions around major traffic generators.

CT-8c: Measures which will modify the timing of trips taken during peak commute periods in a manner which will reduce peak-period congestion are encouraged. These include instituting flexible, variable or staggered work hours by employers.

CT-8d: Ordinances establishing requirements for traffic mitigation and payment of fees for improvements of off-site highway and transit facilities may be adopted by the County. Such ordinances, which may be applicable on a countywide or small-area basis, shall require that traffic mitigation measures and/or payment of fees be imposed as conditions of approval of discretionary planning and/or development permits. Any required fees shall be payable upon issuance of a building permit by the County or upon activation of a planning permit in situations where there is no subsequent building permit to be issued. The amount of any fee imposed pursuant to this policy shall bear a reasonable relationship to the traffic generated by the use and to the costs of facility improvements necessary to maintain an acceptable level of service on affected roadways.

CT-8e: In the event that voluntary TSM measures are not effective or do not result in sufficient reduction of traffic during peak periods of commute traffic congestion, mandatory TSM measures may be imposed by ordinance. These regulations, which may be applicable to existing employers as well as to new development, may require employers to formulate a transportation management program that achieves a specified target reduction in peak-period commute trips by employees compared to the number of trips that would occur if all were made by solo drivers. The employer's transportation management program would be required to: identify a transportation coordinator, disseminate and provide information, select and carry out any combination of TSM measures that would achieve the target reduction in peak-period vehicle trips, and monitor employee transportation and submit periodic reports thereon.

7.0 TRANSPORTATION POLICIES AND IMPROVEMENTS FOR THE NINE SUB-COUNTY REGIONS

7.1 SONOMA COAST/GUALALA BASIN

The Sonoma Coast/Gualala Basin region is not extensively traversed by highways, reflecting its remote location and very low population density. The major highways include State Route 1, the Coast Highway, which parallels the Pacific coastline for its entire length; Highway 116 which connects Jenner with the Russian River resort areas; Bodega Highway; and the Bohemian Highway. All highways in the region are two-lane or one-lane rural roadways. Mendocino County Transit Authority provides daily bus service in each direction serving the small communities along Highway 1 and turning inland to Sebastopol and Santa Rosa.

Traffic patterns in the Sonoma Coast/Gualala Basin region are affected primarily by significant recreational travel generators rather than weekday commute patterns. Routes affected by recreational travel often experience their greatest traffic volumes on Friday evenings in summer and from 3-7 p.m. on Sundays. Roadway segments with significant weekend travel delays include State Route 1 from near Bodega through Bodega Bay to Jenner, and Bodega Highway from Sebastopol through Bodega. Highway 1 north of Fort Ross to the Sea Ranch and Highway 116 from Jenner to Duncans Mills experience lesser travel delays. Projected weekday traffic volumes are relatively low on most highways. Highest volumes, about 4,300 ADT, are expected by year 2005 on Highway 116, with volumes of 2,500 to 3,000 ADT on Highway 1. All roadways are projected to function at Level of Service (LOS) "C" or better on weekdays in year 2005.

The plan includes the following policies and proposed improvements which are specific to the Sonoma Coast/Gualala Basin Region:

CT-9a: The highway plan map, shown in Figure CT-7a, classifies area roadways as follows:

1) Primary Arterials: Highway 1, south of its intersection with Highway 116; Highway 116; Bodega Highway

2) Secondary Arterials: Highway 1, north of its intersection with Highway 116; Bohemian Highway; Graton Road; Occidental Road

3) Major Collectors: Skaggs Springs/Stewart's Point Road; Annapolis Road; Freestone-Valley Ford Road

4) Minor Collectors: Meyers Grade Road; Fort Ross Road; Stewarts Point Road; Cazadero Highway; Westside Road

5) All other highways are classified as local roads

CT-9b: A bypass route for Highway 1 shall be planned at Bodega Bay in accordance with the Local Coastal Plan; no other new facilities are proposed in the arterial and collector systems.

CT-9c: Proposed roadway improvement projects are categorized on the plan map in Figure CT-7a. (Definitions of improvement catgories are summarized in Figure CT-3).

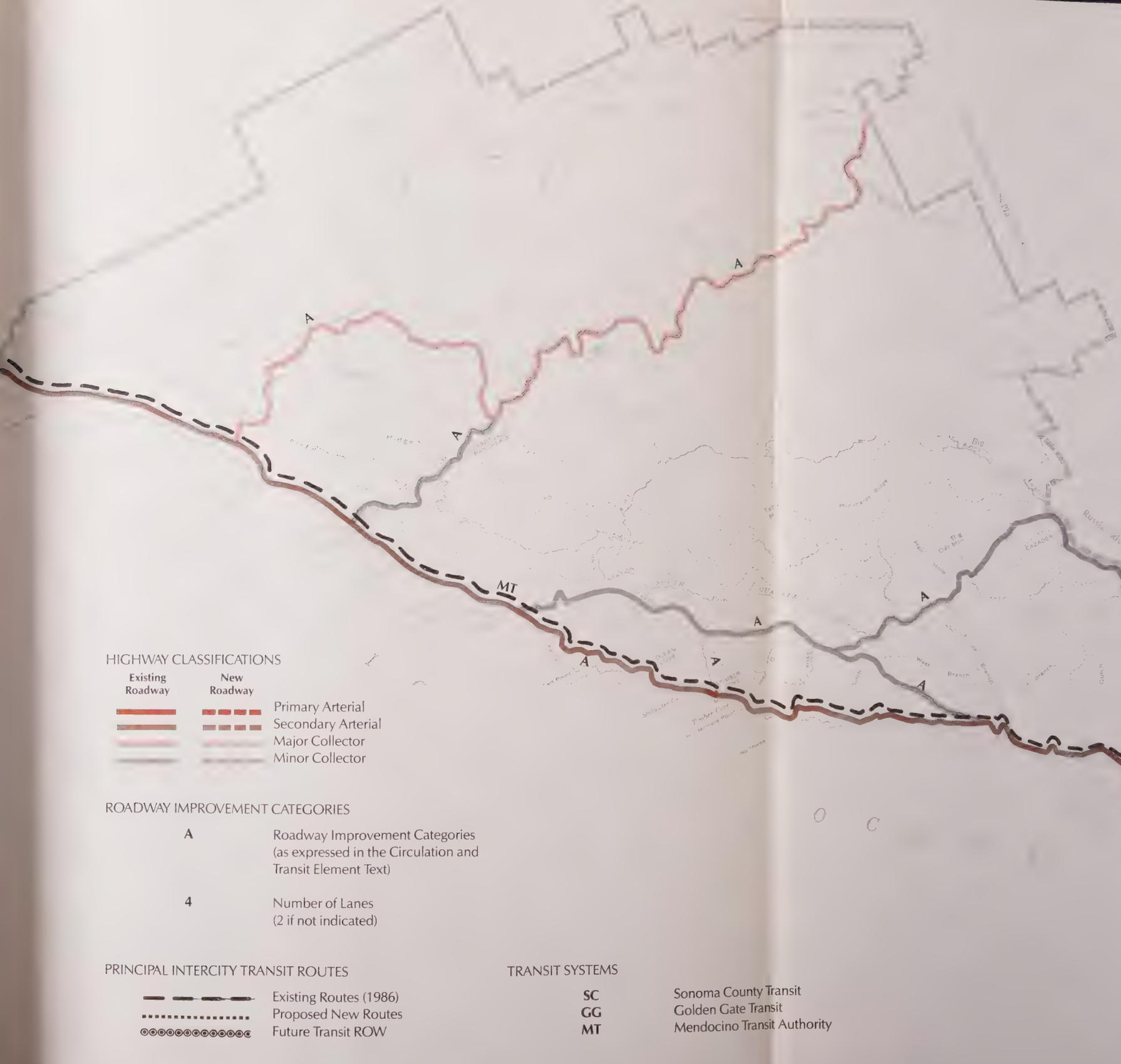
CT-9d: Improvements on Highway 1 should be designed to improve traffic flow during peak periods of recreational travel; these improvements include turn lanes for parking areas at Sonoma Coast State Beaches and shoulder improvements.

CT-9e: No additional transit services are proposed for the Sonoma Coast/ Gualala Basin region.

Figure CT-7a

HIGHWAY AND TRANSIT PLAN

Sonoma Coast / Gualala Basin Planning Area



HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3 4 5
MILES 0 1 2 3

7.2 CLOVERDALE/N.E. COUNTY

The Cloverdale/N.E. County region is not extensively traversed by highways, due to its steep topography, agricultural valleys, and low overall population density. The major highways in the region include the U.S. 101 Freeway, which connects Healdsburg and Cloverdale; State Route 128, which traverses the Knights and Alexander Valleys; Dry Creek Road; Dutcher Creek Road; Alexander Valley Road; and the Geysers Road. With the exception of the 101 Freeway, all highways in the region are one- or two-lane rural roadways. Transit service in 1986 consisted of intercity service by Sonoma County Transit along the U.S. 101 Corridor from Cloverdale to Healdsburg, with intermediate stops in Geyserville. Local fixed-route and demand-responsive jitney service was provided in Cloverdale by its municipal bus system.

Recreational activities have a significant effect on travel patterns on many highways in the Cloverdale/N.E. region. U.S. 101 through and to the north of Cloverdale was characterized by periods of significant weekend travel delays as of 1986, especially during summer months. Periods of weekdend congestion were also experienced on Alexander Valley and Dutcher Creek Roads. In addition to the Redwood Empire tourist attractions located to the north in Mendocino and Humbolt Counties, the immediate Cloverdale area contains numerous wineries, the Geysers, and Lake Sonoma. The latter attraction is expected to become a major visitor destination and will affect Dry Creek and Dutcher Creek Roads as well as U.S. 101. By year 2005, the ratios of average daily summer weekend traffic to average weekday traffic are projected to be: 1.2 in the Dry Creek area, 1.3 on U.S. 101 and 1.2 on Route 128 in Alexander Valley. Average weekday traffic volumes in year 2005 are projected to be about 18,000 vehicles on U.S. 101 between Cloverdale and Healdsburg, an increase of 100 percent over 1984 volumes. All area roadways are projected to function at level-of-service (LOS) "C" or better in year 2005.

The plan includes the following policies and proposed improvements which are specific to the Cloverdale/N.E. County region:

CT-10a: The highway plan, shown in Figure CT-7b, classifies area roadways as follows:

1) Freeways: U.S. 101 for its entire length

2) Primary Arterials: State Route 128

3) Secondary Arterials: Dry Creek Road, Alexander Valley Road

4) Major Collectors: Dutcher Creek Road, the Geysers Road, Canyon Road, Lytton Springs Road.

5) Minor Collectors: Franz Valley Road, Geysers Road (to Cloverdale)

6) All other roadways are classified as local roads.

CT-10b: A bypass route for U.S. 101 at Cloverdale and an extension to the Mendocino County line shall be planned to consist of four lanes to be constructed to freeway standards; three interchanges shall be planned at Cloverdale. No other new facilities are proposed in the arterial and collector systems.

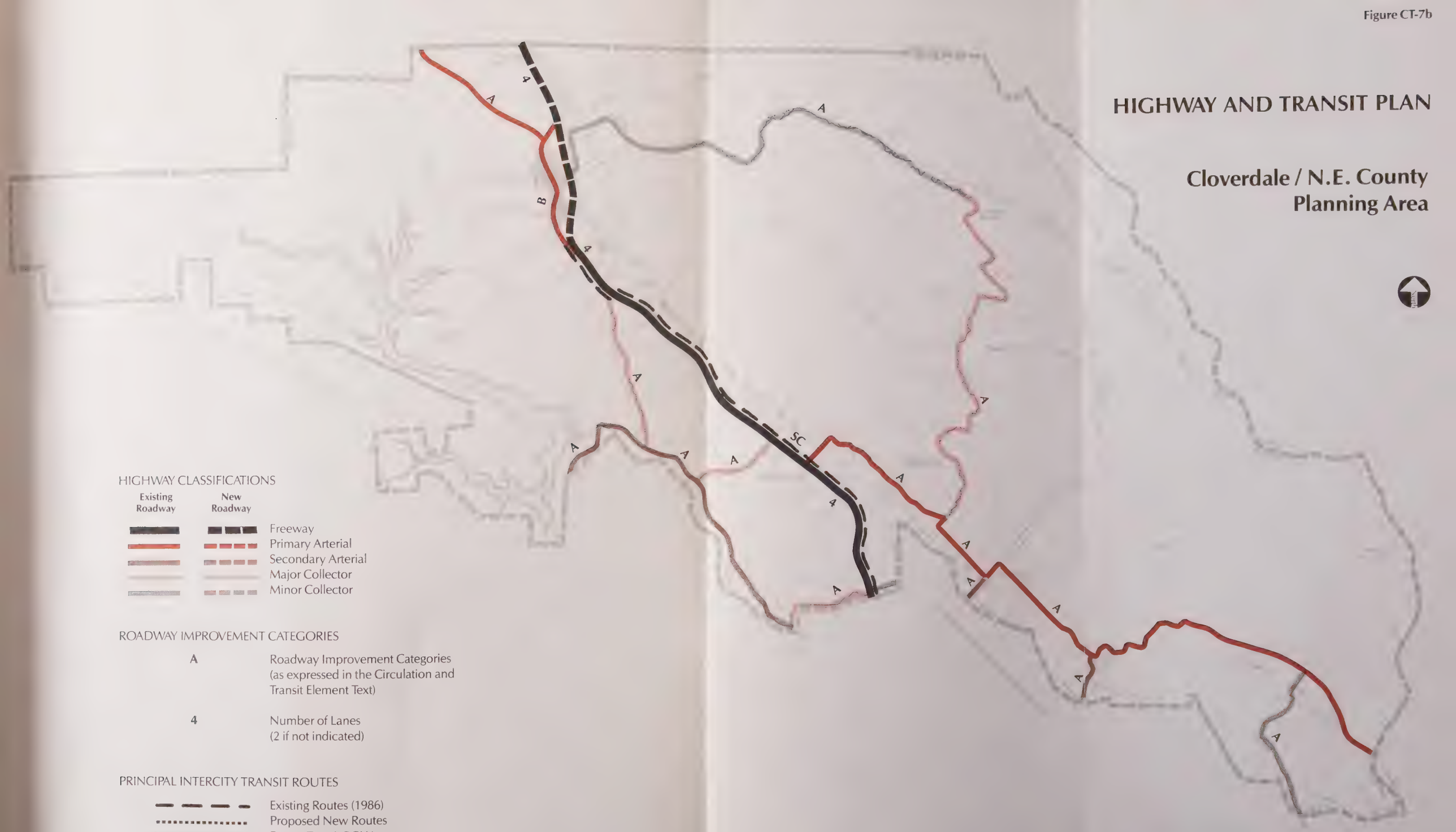
CT-10c: Proposed roadway improvement projects are categorized on the plan map in Figure CT-7b. (Definitions of improvement cateories are summarized in Figure CT-3).

CT-10d: No new transit routes are proposed for the Cloverdale/N.E. County region; additional service may be provided by increasing the frequency of buses on the existing route and/or by express commute service when justified by ridership levels and projected transit demand.

Figure CT-7b

HIGHWAY AND TRANSIT PLAN

Cloverdale / N.E. County Planning Area



HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Freeway
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3 4 5

MILES 0 1 2 3

7.3 HEALDSBURG AND ENVIRONS

This region, which includes the community of Windsor in addition to the City of Healdsburg, has a relatively extensive road network in the vicinity of Healdsburg and in the northern Santa Rosa Plain near Windsor. The major traffic artery is the U.S. 101 facility, which traverses the central part of the planning region and is constructed to freeway standards. Other major highways include the southernmost portions of Dry Creek and Alexander Valley Roads; Eastside and Westside Roads, which parallel the Russian River; Chalk Hill Road; and Windsor River Road, Shiloh Road, and Old Redwood Highway in the Windsor area. With the exception of the Highway 101 Freeway, all highways as of 1986 were two-lane roadways; some roadway segments in the Windsor area were constructed to urban standards. Transit service as of 1986 was confined to the 101 Corridor, and operated principally on Old Redwood Highway. Local fixed-route and demand-responsive bus service was provided in Healdsburg by its municipal bus operator.

Projected future travel patterns are greatly affected by the sizable amounts of growth allocated by the land-use plan in the Windsor area and to a lesser extent in Healdsburg. Average weekday traffic volumes of 66,000 vehicles are projected on U.S. 101 between Healdsburg and Windsor, a substantial increase over the 35,000 estimated for 1984. Large increases in traffic are expected on local roads in the Windsor area. Several area roadways are projected to significantly affected by weekend recreational travel; by year 2005 the ratios of average daily summer weekend traffic to average weekday traffic are projected to be about 1.25 on U.S. 101 and 1.2 on Dry Creek and Alexander Valley Roads. Several roadways in the region are expected to continue to be affected by gravel trucks associated with mining along the Russian River. All area roadways, except for a small segment of U.S. 101 south of Windsor River Road and the portion of Windsor River Road in central Windsor are projected to operate in year 2005 at Level-of-Service (LOS) "C" or better; those two roadway segments are expected to experience moderate congestion, especially during peak commute periods.

The plan includes the following policies and transportation system improvements which are specific to the Healdsburg and Environs area:

CT-11a: The Highway Plan, shown in Figure CT-7c, classifies area roadways as follows:

1) Freeways: U.S. 101 for its entire length

2) Primary Arterials: Old Redwood Highway, southward from its interchange with U.S. 101 in Windsor; Mark West Springs Road; Healdsburg Avenue

3) Secondary Arterials: Dry Creek Road; Alexander Valley Road; Eastside Road; Old Redwood Highway north of Windsor: Windsor River Road; River Road; Shiloh Road (portion)

4) Major Collectors: Chalk Hill Road; Lytton Springs Road; Starr Road; Arata Lane; Pleasant Avenue; a portion of Shiloh Road; Brooks Road; Wilson Lane; Conde Lane; and Vinecrest/Hendree

5) Minor Collectors: Westside Road; Franz Valley Road; and several streets in the Windsor area.

6) All other highways and streets in unincorporated areas are classified as local roads.

CT-11b: An additional travel lane in each direction shall be planned for the U.S. 101 Facility south of the Windsor River Road interchange. This lane may be reserved for High Occupancy Vehicles during peak commute periods. A new interchange shall be planned at Arata Lane and substantial interchange improvements at Windsor River Road.

CT-11c: Old Redwood Highway southward from its interchange with U.S. 101 in central Windsor shall be designated as part of the parallel arterial system in the 101 Corridor and shall be planned for two travel lanes in each direction.

CT-11d: An extension of Shiloh road to intersect with Eastside Road shall be planned; trucks transporting gravel from Russian River mining sites shall be encouraged to utilize this route rather than Windsor River Road through downtown Windsor.

CT-11e: Substantial numbers of new roadway segments and improvements are needed to accommodate future growth in the Windsor Area; the Windsor Specific Plan shall provide a detailed plan for these transportation facilities. Development fees shall be established by ordinance to finance a portion of the costs of these facilities.

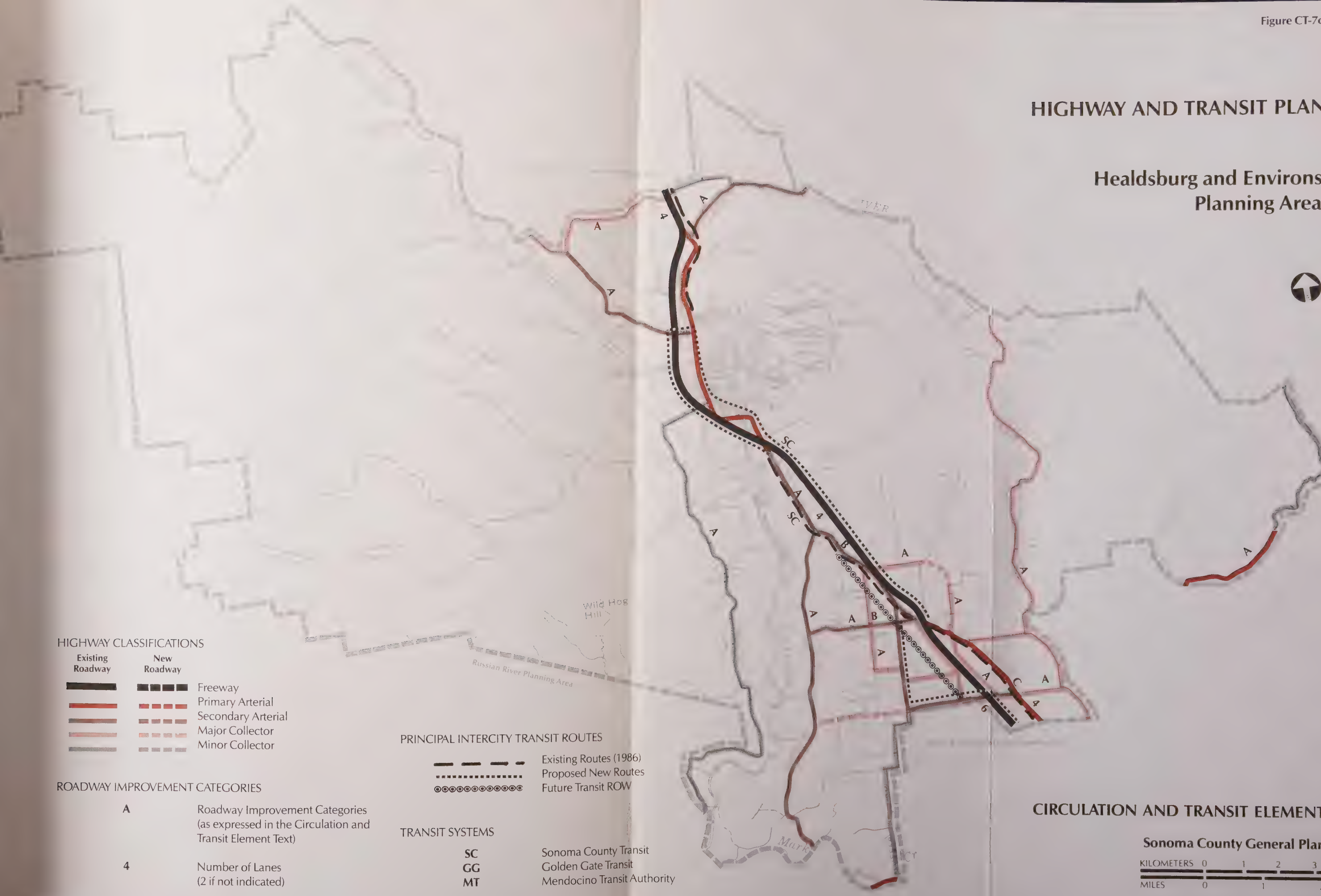
CT-11f: Proposed roadway improvement projects are categorized on the plan map in figure CT-7c. (Definitions of improvement categories are summarized in Figure CT-3).

CT-11g: A new intercity commute transit route is proposed which would connect the Windsor/Airport Blvd./Larkfield area with Northwest Santa Rosa, the Santa Rosa Air Center area, and West Rohnert Park. Existing routes may be upgraded with more frequent service and express service when justified by expected patronage and cost factors.

CT-11h: The Windsor community shall be a priority area for the provision of local area transit service, with timing determined by growth, related potential transit demand, and cost factors. The Windsor area is a potential location for a transit center/transfer site.

HIGHWAY AND TRANSIT PLAN

Healdsburg and Environs Planning Area



CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

7.4 RUSSIAN RIVER AREA

The Russian River Area, which encompasses the resort communities of Forestville, Rio Nido, Guerneville, and Monte Rio, has a road network which is relatively extensive in the immediate Russian River corridor. However, other portions of the area, expecially west of Forestville, are wooded, steeply-sloped, sparsely populated, and not traversed extensively by roadways. Many local roads within older vacation-home subdivisions along the river are very narrow and not constructed to modern standards. Major traffic arteries are River road, which links the area to the U.S. 101 Freeway; State Highway 116, which parallels the River west of Guerneville and links the area to Sebastopol; Bohemian Highway; and Mirabel Road in Forestville. All highways in the region are two-lane rural roadways. Intercity transit service is provided by Sonoma County Transit and links the river communities with Santa Rosa via Sebastopol.

Traffic patterns in the Russian River Area are significantly affected by recreational travel, especially on summer weekends. As of 1986, extensive weekend travel delays were experienced along River Road between Guerneville and Hacienda, and lesser delays along River Road to U.S. 101, on Highway 116, the Bohemian Highway, and Westside Road. Modelling of future summer weekend recreational travel indicated that the ratios of maximum summer weekend traffic to average weekday traffic by year 2005 were likely to be 1.8 on State Route 116 (Gravenstein Highway) and 1.5 in the River Road corridor. Average weekday travel is projected to be about 14,000 vehicles by year 2005 on River road in the vicinity of Rio Dell, an increase from just over 10,000 in 1984; daily volumes on Highway 116 west of Forestville are projected to be considerably lower, about 6,000 vehicles, compared to under 4,000 in 1984.

All area roadways are projected to function in year 2005 at Lever-of-Service (LOS) "C" or better on an average weekday basis, with moderate congestion on River Road from Hacienda to U.S. 101 and in central Guerneville during the peak commute period. Moderate summer weekend congestion in the same roadway segments is projected due to recreational travel.

The plan includes the following policies and proposed improvements which are specific to the Russian River Area:

CT-12a: The highway plan, shown in Figure CT-7d, classifies area roadways as follows:

1) Primary Arterials: River Road, S.R. 116, Mirabel Road, Guerneville Highway

2) Secondary Arterials: Bohemian Highway

3) Major Collectors: Westside Road

4) Minor Collectors: Austin Creek Road; Armstrong Woods Road; Green Valley Road; Laguna Road; Covey Road; Harrison Grade Road

5) All other highways are classified as local roads

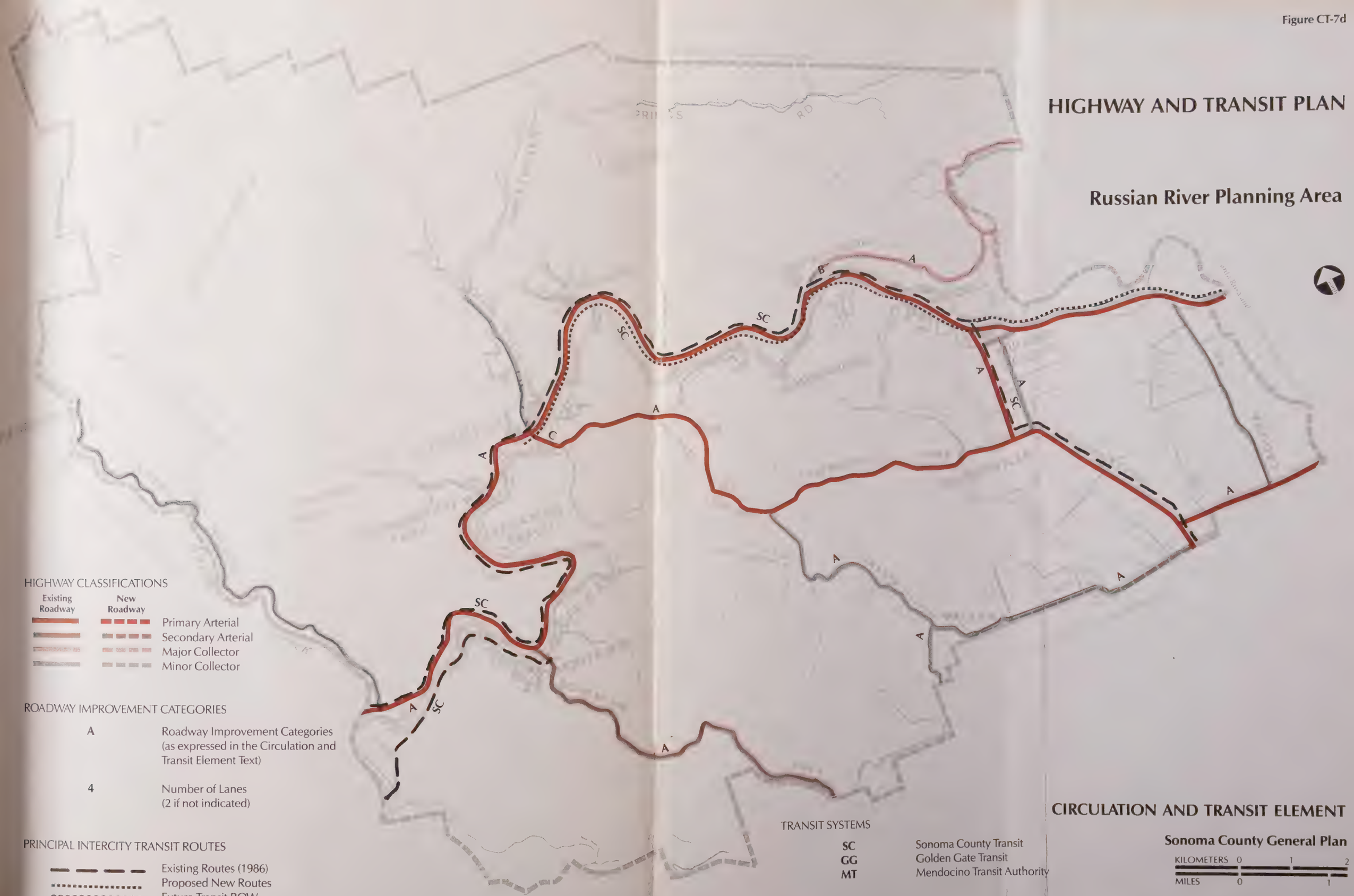
CT-12b: A "bypass" for central Forestville on Highway 116 shall be planned; the alignment shall be established in a future update of the specific plan for central Forestville.

CT-12c: Proposed roadway improvement projects are categorized on the plan map in Figure CT-7d. (Definitions of roadway improvement categories are summarized in Figure CT-3).

Ct-12d: The proposed future transit network is shown in Figure CT-7d; additional service included in the plan consists of a new intercity route linking the Guerneville area with Santa Rosa via River Road and local area service within the central resort area between Monte Rio and Rio Nido.

HIGHWAY AND TRANSIT PLAN

Russian River Planning Area



HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2

MILES 0 1

7.5 SANTA ROSA AND ENVIRONS

Unlike the other eight planning regions, Santa Rosa and Environs is a net importer of commuters, most of whom travel from other parts of Sonoma County to work in the area, rather than from other counties. The Santa Rosa Plain is more extensively traversed by roadways than any other portion of the county. The Highway 101 freeway, which bisects the area in a north-south direction, is the major transportation corridor. State Route 12 also has several segments in western and southern Santa Rosa that are constructed to freeway standards. Important arterials which parallel Highway 101 include Fulton and Stony Point Roads on the west side and Old Redwood Highway/Petaluma Hill Road on the east. Other major arteries include Highway 12, which links Santa Rosa with Sonoma and Sebastopol; River Road, Guerneville Road and Todd Road, which provide access to points in western Sonoma County; and Mark West Springs Road, Calistoga Road, and Bennett Valley Road, which provide access to eastern Sonoma County.

The City of Santa Rosa has extensive local bus service provided by its transit system, known as Citybus. Regional and intercounty commute bus service is provided by Golden Gate Transit along the 101 corridor to San Francisco, with intermediate stops in northern and central Marin County. Sonoma County Transit's radial bus route network has its focal point in Santa Rosa, with service connections to all cities and most unincorporated communities in the county. Transfers between routes and systems is accommodated primarily in central Santa Rosa at the Second Street "Transit Mall".

Travel patterns in Santa Rosa and Environs reflect the dominant role of the city of Santa Rosa in the County's economy. By year 2005, the region is projected to contain approximately 99,000 jobs but only about 94,000 employed residents; it is the only area among the nine regions projected to be a net importer of labor services. This employment concentration is reflected in the substantial impacts of commuter traffic on area roadways. Average daily traffic volumes are projected to reach nearly 100,000 vehicles on U.S. 101 just south of Santa Rosa, 21,000 on Highway 12 to the east, 20,000 on Fulton Road south of the Airport Boulevard Area, over 16,000 on River Road, 17,000 on Stony Point Road south of Todd Road, and 13,000 on Petaluma Hill road just south of Santa Rosa. These projected year 2005 traffic volumes represent substantial increases over traffic levels existing as of 1984. During the A.M. peak, traffic is projected to be moderately congested (LOS "D" or "E") on several streets in the city of Santa Rosa, in both directions on the U.S. 101 Freeway throughout the area, easterly on Highway 12 to Oakmont Drive, on Highway 12 between the city of Sebastopol and Fulton Road, on a segment of Fulton Road above Highway 12, and on River Road. Localized congestion is projected, in addition, at various freeway interchanges and their ramps and cross-streets.

The plan includes the following policies and proposed improvements which are specific to the Santa Rosa and Environs region:

CT-13a: The highway plan, shown in Figure CT-7e, classifies area roadways located outside the city of Santa Rosa as follows:

1) Freeways: U.S. 101 and Highway 12 from Llano Road to Farmers Lane

2) Primary Arterials: River Road; Mark West Springs Road; Fountaingrove Parkway; Fulton Road; Guerneville Road; West College Avenue; Stony Point Road; Hearn Avenue; Farmers Lane (extended); Petaluma Hill Road; Sonoma Highway; Old Redwood Highway

3) Secondary Arterials: Airport Boulevard; Occidental Road; Sebastopol Road; Wright Road; Llano Road; Todd Road; South Santa Rosa Avenue; Crane Canyon Road; Bennett Valley Road; Calistoga Road

4) Major Collectors: Faught Road; Piner Road; Olivet Road; Hall Road; Stanford Road; Ludwig Avenue; Bellevue Avenue; Laughlin Road; Sky Lane; South Dutton Avenue

5) Minor Collectors: Slusser Road; St. Helena Road; Wallace-Riebli Road

6) All other highways located in unincorporated areas are classified as local roads.

CT-13b: A third travel lane in each direction shall be planned for the U.S. 101 freeway; the additional lane may be reserved for High-occupancy Vehicles (HOV) in the direction of the peak traffic flow during the peak commute period. Substantial interchange improvements shall be planned at Airport Boulevard, Fulton Road, Hearn Avenue, and Todd Road and a new interchange at Bellevue.

CT-13c: Highway 12 shall be planned as a four-lane freeway from Llano Road to Farmers Lane; new interchanges shall be planned at Fulton Road, Stony Point Road, Brookwood Avenue, and Farmers Lane. Reconstruction of the segment of Highway 12 at the Sonoma County Fairgrounds to freeway standards shall have high priority.

CT-13d: Fulton Road/Stony Point Road shall be planned as a parallel arterial for the Highway 101 facility; four lanes shall be planned north of Todd Road. Sufficient right-of-way for four travel lanes shall be reserved for the entire length of the parallel arterial.

CT-13e: Old Redwood Highway and Petaluma Hill Road/Adobe Road shall be planned as a parallel arterial on the east side of the Highway 101 facility; four lanes shall be planned on Old Redwood Highway from Santa Rosa to Windsor and two travel lanes on Petaluma Hill Road/Adobe Road. Sufficient right-of-way shall be reserved for four lanes.

CT-13f: Major new highway facilities included in the plan are: 1) an extension of the Fountaingrove Parkway; 2) extension of Farmers Lane; 3) extension of Todd Road to connect Highway 116 south of Sebastopol with Petaluma Hill Road; 4) extension of Laughlin Road/Sky Lane to Shiloh Road.

CT-13g: Proposed roadway improvement projects in unincorporated areas are categorized on the plan map in Figure CT-7e(1). (Definitions of improvement categories are summarized in Figure CT-3).

CT-13h: New regional, intercounty express commute bus service shall be planned in the 101 Corridor; increases in frequency of service shall be planned on existing routes as growth and associated increases in transit demand occur.

CT-13i: Additional intercity bus service within Sonoma County shall be planned as follows: 1) an express commute route to the Sonoma Valley; 2) a direct route via River Road to the Russian River Area; 3) commute service along Stony Point Road and along Petaluma Hill Road to Petaluma; 4) commute service linking the Windsor/Airport Boulevard area, Northwest Santa Rosa, Santa Rosa Air Center and West Rohnert Park. Increases in the frequency of service along existing routes shall be planned as growth and associated increases in transit demand occur.

CT-13j: Detailed transportation plans may be prepared for unincorporated urban areas adjacent to the City of Santa Rosa as part of any future revisions of specific plans encompassing these areas.

Figure CT-7e(1)

HIGHWAY AND TRANSIT PLAN

Santa Rosa and Environs Planning Area

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Freeway
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

Sonoma Valley Planning Area

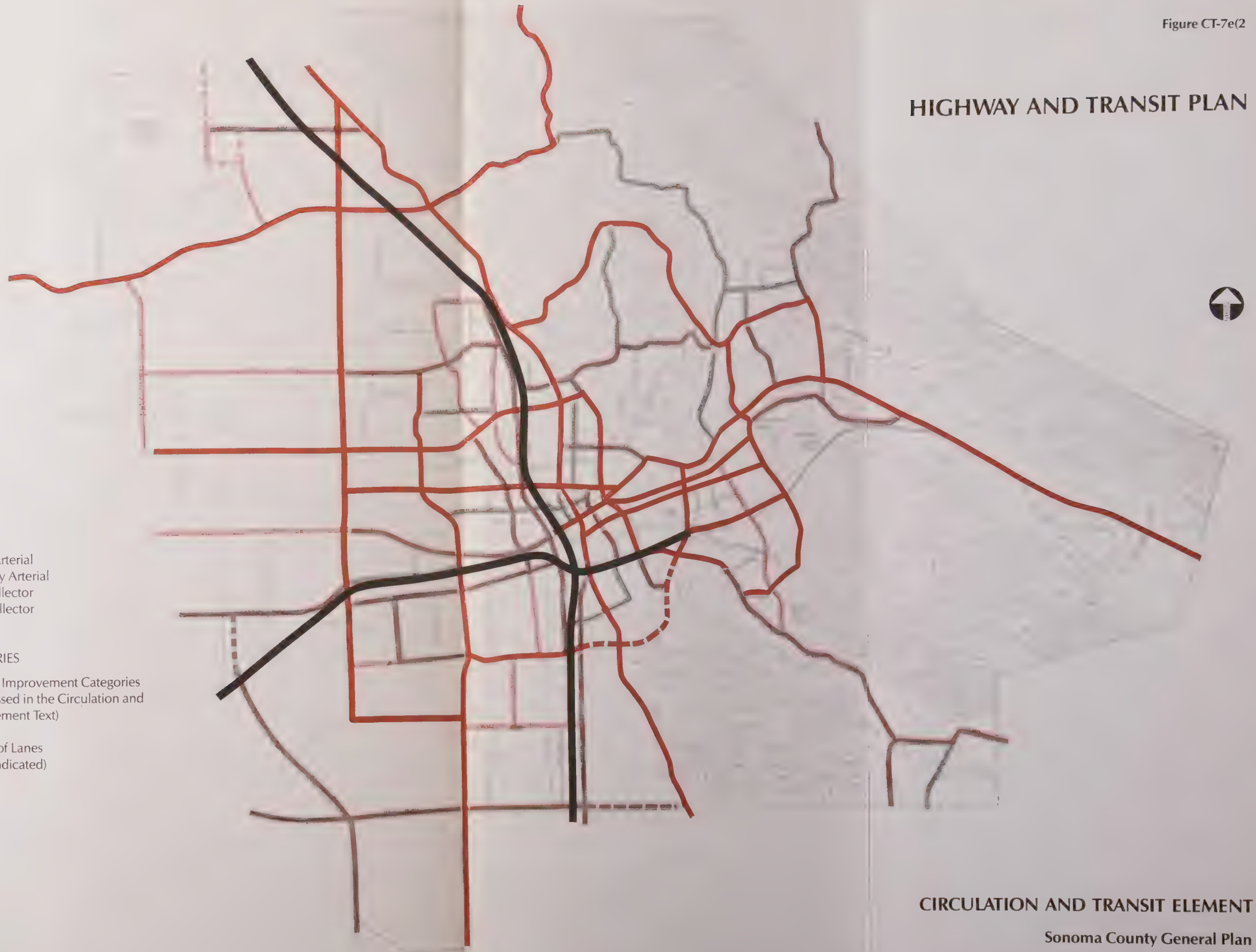
CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3

MILES 0 1 2

HIGHWAY AND TRANSIT PLAN



HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Freeway
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

7.6 SEBASTOPOL AND ENVIRONS

With its large rural residential population, the Sebastopol and Environs region is extensively traversed by rural roadways, especially in its eastern portions. State Route 116, known as the Gravenstein Highway, is the major traffic artery; other important roadways include Bodega Highway, Graton Road, Occidental Road, Roblar Road, Petaluma-Valley Ford Road, and small segments of Highway 12, Llano Road, and Stony Point Road. Inter-county commute to bus service to San Francisco and Marin is provided by Golden Gate Transit along Highway 116; intra-county service is provided by Sonoma County Transit, with routes linking the area to Santa Rosa, Petaluma and the Russian River area.

Area roadways are significantly affected by weekend recreational travel as well as by commute travel. Gravenstein Highway south of Sebastopol and Bodega Highway experienced substantial weekend travel delays as of 1986, with lesser delays on Gravenstein Highway North. The dispersed pattern of development is projected to contribute to high traffic volumes and deficiencies in capacity on some major arteries by year 2005. Average daily traffic is projected to reach 26,000 vehicles on Highway 116 just south of Sebastopol, 38,000 on Highway 12 to the east, and 17,000 on Stony Point Road just north of its intersection with Highway 116. These represent increases of 37, 73 and 600 percent, respectively, over traffic levels in 1984. All three highways are projected to experience moderately congested conditions on both a peak period and average daily basis in 2005. All other roadways in unincorporated areas are expected to operate at level of service "C" or better in year 2005. Some area roadways are projected to experience higher traffic volumes on weekends due to recreational travel. By 2005, the ratios of summer weekend to average weekday traffic are projected to be 1.8 on Gravenstein Highway and 1.3 on Bodega Highway and Graton Road. However, since weekend travel is more evenly spread out during the day, congestion is not expected to be greater than on weekdays.

The plan includes the following policies and proposed improvements which are specific to the Sebastopol and Environs region:

CT-14a: The highway plan, shown in Figure CT-7f, classifies area roadways as follows:

1) Primary Arterials: Gravenstein Highway (S.R. 116), Highway 12, Bodega Highway, Guerneville Road, Petaluma-Valley Ford Road, Stony Point Road.

2) Secondary Arterials: Llano Road, Roblar Road, Occidental Road, Graton Road

3) Major Collectors: Mills Station Road/Ferguson Road, Green Hill Road

4) Minor Collectors: Bloomfield Road, Hessel Road, Canfield Road, Burnside Road, Barnett Valley Road, Water Trough Road, Pleasant Hill Road, Jonive Road, Green Valley Road

5) All other highways in unincorporated areas are classified as local roads

CT-14b: Llano Road shall be planned as a bypass route on the east side of Sebastopol by extending it northward above Highway 12 to intersect with Occidental Road. The intent is to help relieve heavy traffic congestion in central Sebastopol by providing an alternative route for some through trips.

CT-14c: An extension of Todd Road shall be planned to intersect with Highway 116 south of Sebastopol; the purpose shall be to provide an alternative east-west route to potentially relieve traffic congestion on Highway 12.

CT-14d: Stony Point Road, a parallel arterial in the Highway 101 corridor, shall be planned to have a new alignment at its intersection with Highway 116 in order to eliminate the offset in the intersection and to improve traffic flow.

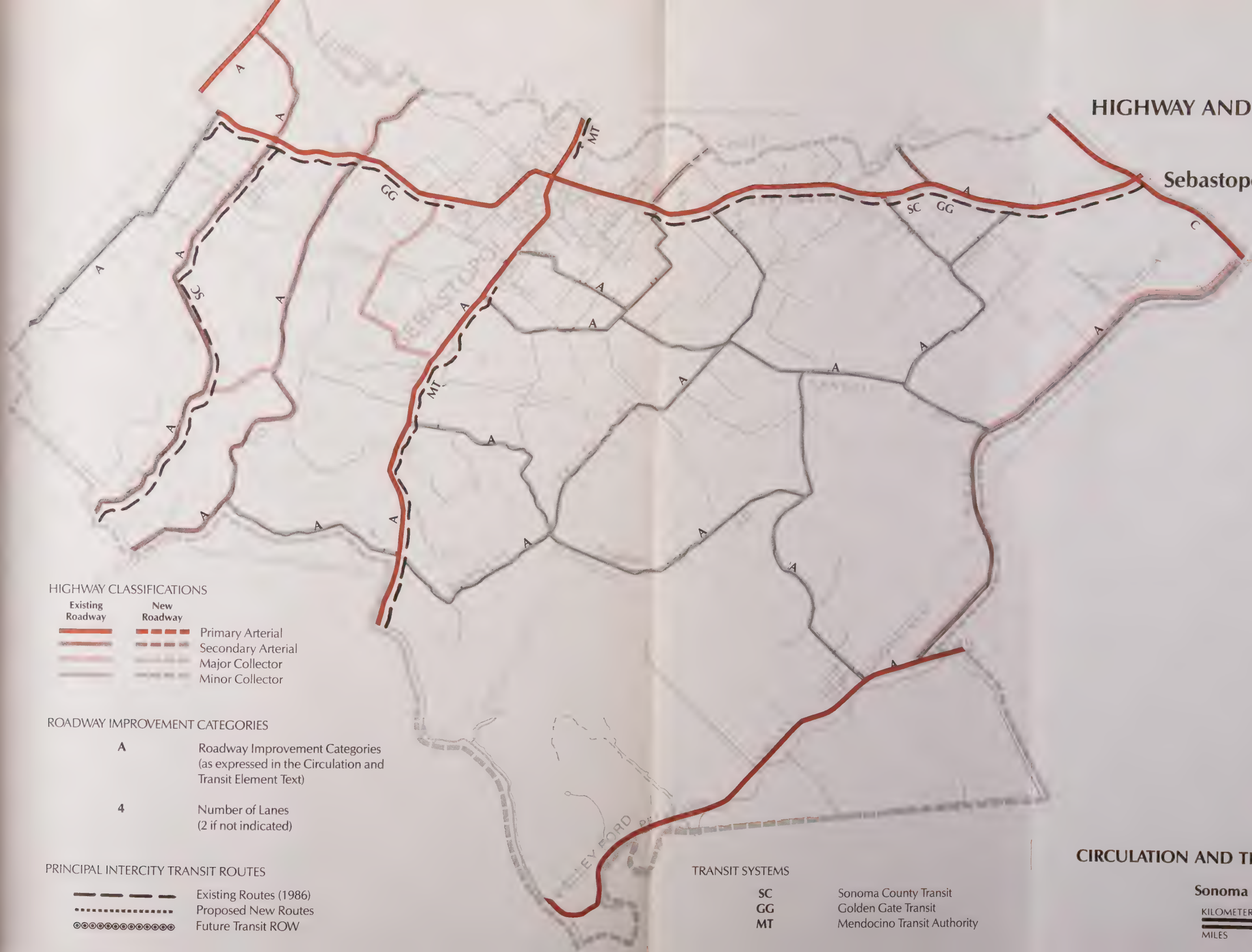
CT-14e: Proposed roadway improvement projects are categorized on the plan map in Figure CT-7f. (Definitions of improvement categories are summarized in Figure CT-3).

CT-14f: Additional transit service may be provided by increasing the frequency of buses and augmenting express commute service on existing bus routes in a manner which responds to growth and increases in potential transit demand; no new transit routes are included in the plan.

Figure CT-7f

HIGHWAY AND TRANSIT PLAN

Sebastopol and Environs Planning Area



HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2

MILES 0 1

7.7 ROHNERT PARK - COTATI AND ENVIRONS

Traffic patterns in the Rohnert Park-Cotati region, one of the fastest growing areas of Sonoma County, are significantly affected by north-south commute travel. Portions of the area located in the Santa Rosa - Cotati Plain are extensively traversed by roadways, while the sparsely populated slopes of Sonoma Mountain to the east have few roads. The U.S. 101 Freeway is the major north-south highway facility, with Stony Point Road and Petaluma Hill Road comprising parallel routes. Other important highways include Old Redwood Highway, Highway 116 (Gravenstein Highway), the Rohnert Park Expressway, Snyder Lane, and Crane Canyon Road. The 101 Corridor is served extensively by regional commute transit and intercity transit, operated by the Golden Gate and Sonoma County Transit Systems. Local service is provided in the two cities through contractual arrangements by Sonoma County Transit.

The large residential areas of Rohnert Park and several large-scale employers in that city have a substantial influence on traffic patterns, although long-distance commute trips to San Francisco and Marin are dominant. Average daily traffic volumes in the 101 Corridor are projected to reach 75,000 vehicles on U.S. 101, 17,000 on Stony Point Road, and 13,00 on Petaluma Hill Road by year 2005. These volumes represent increases of 25, 600, and 53 percent, respectively, over traffic levels in 1984. Moderate congestion is projected on an average daily traffic basis along the entire length of U.S. 101, along Petaluma Hill Road between Sonoma State University and Penngrove in the vicinity of the Hewlett-Packard facility, on Highway 116, and on several streets in the Cities of Rohnert Park and Cotati. Peak period congestion is projected along those same routes and on the Rohnert Park Expressway at its interchange with Highway 101. Other roadways in the area are expected to operate at level of service "C" or better in year 2005.

The plan includes the following policies and proposed improvements which are specific to the Rohnert Park - Cotati region:

CT-15a: The highway plan, shown in Figure CT-7g, classifies area roadways as follows:

1) Freeway: U.S. 101

2) Primary Arterials: Stony Point Road, Petaluma Hill Road, Adobe Road, Highway 116, Rohnert Park Expressway

3) Secondary Arterials: Old Redwood Highway, Snyder Lane, Santa Rosa Avenue, Commerce Boulevard, Cotati Avenue, Crane Canyon Road

4) Major Collectors: Railroad Avenue, West Sierra Avenue, Wilfred Avenue

5) Minor Collectors: Mountain View Avenue, Pressley Road

6) All other highways in the unincorporated area are classified as local roads.

CT-15b: Stony Point Road and Petaluma Hill Road/Adobe Road shall be planned as parallel arterials to the U.S. 101 facility; improvements shall be designed to make these alternative routes attractive to intra-county commuters so that these trips may be diverted from U.S. 101 during periods of peak commuter travel and congestion.

CT-15c: An extension of the Rohnert Park Expressway shall be planned to intersect with and terminate at Stony Point Road.

CT-15d: An additional travel lane shall be planned in either direction on the U.S. 101 Freeway; this lane may be reserved for high-occupancy and transit vehicles in the direction of the peak traffic flow during commute periods. Interchange improvements may be provided at the Railroad Avenue interchange.

CT-15e: Proposed roadway improvement projects are categorized on the plan map in Figure CT-7g. (Definitions of improvement categories are summarized in Figure CT-3).

CT-15f: Additional inter-county and inter-city commute bus routes shall be provided in a manner which is responsive to growth patterns and associated increases in transit demand. These potential new routes include:

1) new inter-county routes on U.S. 101 to serve employment centers in northern and central Marin County.

2) new inter-city commute service between Santa Rosa and Petaluma along the Stony Point Corridor, with a loop into western Rohnert Park.

3) new inter-city commute service between Santa Rosa and Petaluma along the Petaluma Hill Road corridor, with a loop into eastern Rohnert Park, Sonoma State University and the Hewlett-Packard areas.

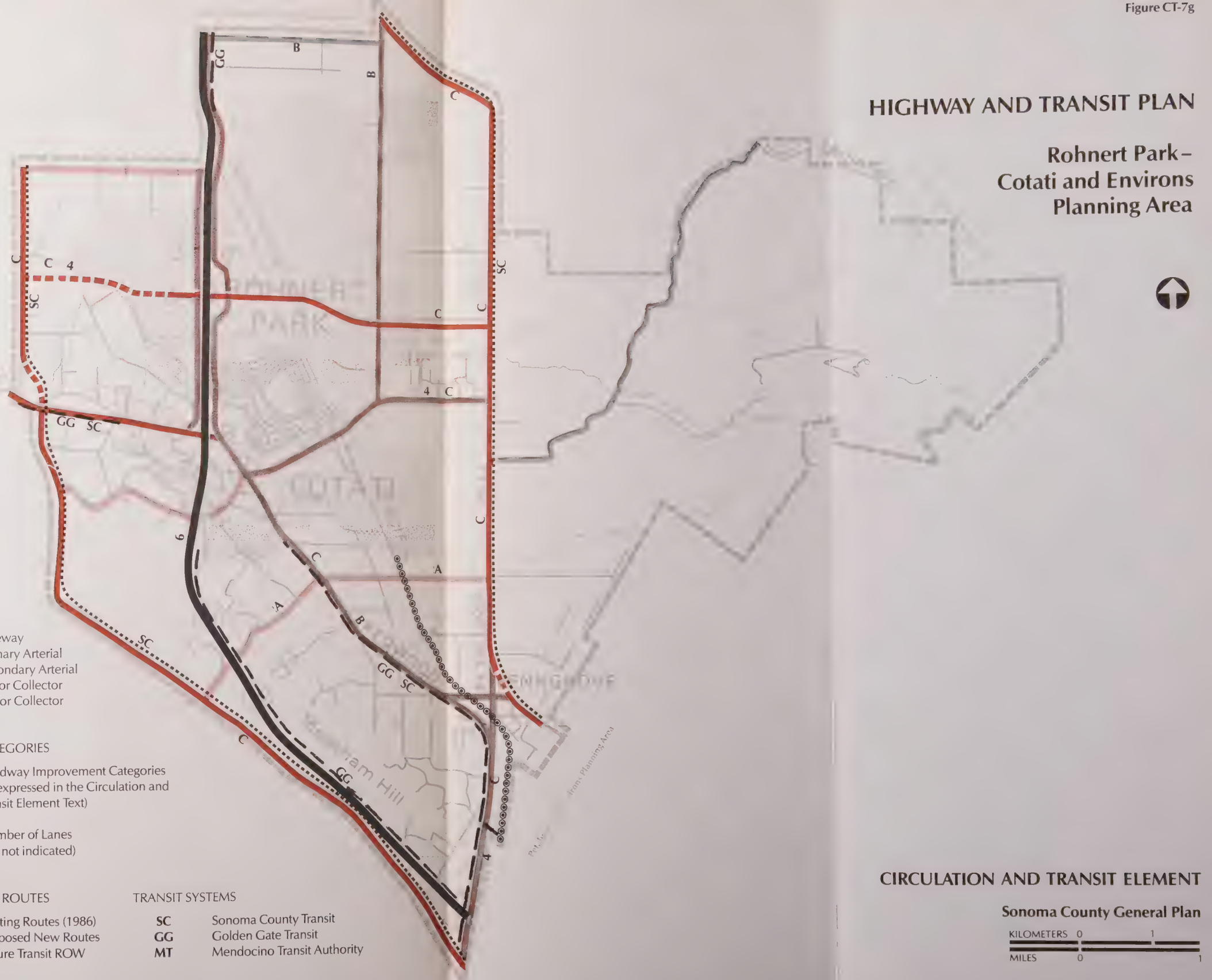
4) new inter-city commute service between the Windsor/Larkfield/Airport Boulevard area and western Rohnert Park, along the western edge of Santa Rosa.

CT-15g: Additional transit service may be provided by increasing the frequency of buses on existing routes in a manner which is responsive to growth patterns and projected ridership levels.

Figure CT-7g

HIGHWAY AND TRANSIT PLAN

Rohnert Park – Cotati and Environs Planning Area



HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Freeway
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

KILOMETERS 0 1

MILES 0 1

7.8 PETALUMA AND ENVIRONS

The Petaluma and Environs region, located adjacent to the Marin County line, has the highest rate of out-commute to other counties among the nine planning areas. The transportation system configuration consists of the railroad and a series of highways oriented in a northwest-southeast direction parallel to the Petaluma River. The major transportation corridor is the U.S. 101 Freeway, which bisects the planning area and the City of Petaluma in a north-south direction. Other principal traffic arteries are State Highways 116 (Stage Gulch Road) and 37, Adobe Road, Lakeville Highway, Stony Point Road, Petaluma-Valley Ford Road, Petaluma-Point Reyes Road, Ely Road, Washington Street, and Petaluma Boulevard. The southern and western portion of the region encompasses rolling coastal hills, praries, and dairylands, and is not extensively traversed by roadways. Regional and inter-county commute bus service is provided by Golden Gate transit in the Highway 101 corridor, with loops into western and eastern Petaluma. Inter-city service between Petaluma and other cities within the county is provided by Sonoma County Transit; local service is provided by the municipal transit systen in Petaluma.

In addition to the transbay and Marin commute, travel patterns are significantly affected by extensive residential development and several large employment and retail centers located within the region. Growth in employment and retailing has been focused in recent years on the city's east side. Several rural roadways are significantly affected by recreational travel on weekends, including Petaluma-Valley Ford Road, U.S. 101, Lakeville Highway and Stage Gulch Road. Ratios of projected peak summer weekend traffic volumes to average weekday volumes on these routes are 1.6, 1.3, 1.2, and 1.15, respectively. Average weekday traffic volumes are projected to be 70,000 vehicles on U.S. 101 at the Marin County line and 75,000 on that route just north of Petaluma, representing increases of 21 and 25 percent respectively. Traffic volumes are projected to increase by 100 percent or more on Stage Gulch Road, Adobe Road, and Stony Point Road. Moderate congestion during the A.M. peak period is projected to be limited to southbound lanes of U.S. 101, Petaluma Boulevard, State Route 37 and several roadway segments in central and eastern Petaluma. All other highways in unincorporated areas are projected to operate at level-of-service "C" or better in year 2005.

The plan includes the following policies and proposed improvements which are specific to the Petaluma and Environs region:

CT-16a: The highway plan, shown in Figure CT-7h, classifies area roadways as follows:

1) Freeways: U.S. 101

2) Primary Arterials: State Route 37, Stage Gulch Road, Adobe Road, Frates Road, Lakeville Highway, Petaluma Boulevard, Stony Point Road, Petaluma-Valley Ford Road, Washington Street

3) Secondary Arterials: Ely Road, McDowell Boulevard, Corona Road, Casa Grande Road, Skillman Lane, Pepper/Meacham Road, Tomales Road, "D" Street (Petaluma-Point Reyes Road)

4) Major Collectors: Stage Gulch Road (between Adobe and Lakeville), Spring Hill Road

5) Minor Collectors: Pepper Road (portion), Thompson Lane, Lohrman Lane, Gossage Avenue, Magnolia Avenue, Chileno Valley Road, "I" Street, San Antonio Road

6) All other highways in unincorporated areas are classified as local roads.

CT-16b: A third lane in each direction shall be planned on the U.S. 101 Freeway and may be reserved for high-occupancy and transit vehicles in the direction of peak traffic flow during commute periods.

CT-16c: A new interchange with U.S. 101 shall be planned at Corona Road and a new overpass at Ranier Avenue (extended). Major improvements shall be planned at the Washington Street interchange.

CT-16d: Stony Point Road and Adobe Road/Petaluma Hill road shall be planned as parallel arterials to the U.S. 101 facility, in a manner that will encourage inter-county commuters to utilize the parallel routes rather than 101 during peak-period congestion. Sufficient rights of way shall be reserved to allow two travel lanes in each direction on the parallel arterials.

CT-16e: Proposed roadway improvement projects are categorized on the plan map in Figure CT-7h. (Definitions of roadway improvement categories are summarized in Figure CT-3).

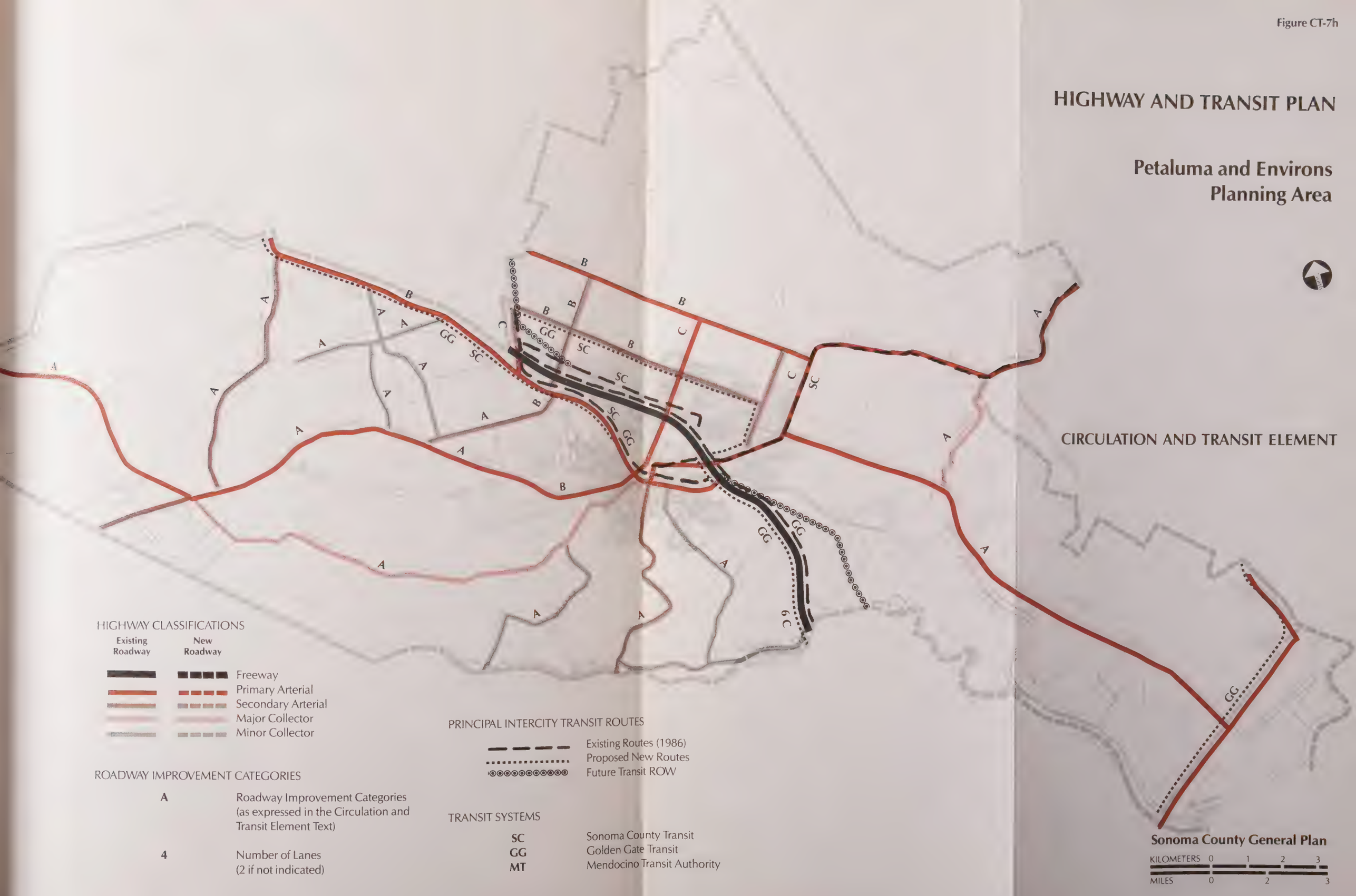
CT-16f: An additional inter-county/transbay commute bus route is included in the plan to connect the growing East Petaluma area with San Francisco, with intermediate stops in northern and central Marin County. Additional inter-county service may be instituted between Santa Rosa and employment centers in Novato and San Rafael, with an intermediate loop into Petaluma, in a manner which is responsive to growth patterns and related increases in potential transit demand.

CT-16g: Transit service may be expanded by increasing the frequency of buses on existing routes, in a manner which is responsive to growth patterns and increases in transit demand.

Figure CT-7h

HIGHWAY AND TRANSIT PLAN

Petaluma and Environs Planning Area



HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Freeway
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3

MILES 0 2 3

7.9 SONOMA VALLEY

The principal transportation corridor in the Sonoma Valley region is State Route 12, which extends for nearly the entire length of the valley from Santa Rosa/Kenwood southeasterly to the City of Sonoma and the Napa County line. The southern portion of the Sonoma Valley, especially in the vicinity of the Sonoma-Boyes Hot Springs urban area, is more-extensively traversed by roadways than the agricultural northwesterly portion, while the slopes of the Mayacmas Range and Sonoma Mountain contain few roadways. In addition to Highway 12, important traffic arteries include Arnold Drive, which parallels Route 12 from near Glen Ellen southeasterly to the Sonoma area; State Route 116 (Stage Gulch Road) which links the valley to the Petaluma area; State Routes 121 and 37, the latter of which links the lower Sonoma Valley with the U.S. 101 Freeway in Marin County and with the City of Vallejo in Solano County; and Bennett Valley Road, which extends from Glen Ellen to Santa Rosa. With the exception of a small segment of Highway 12 in central Boyes Springs which has three lanes, all highways in the unincorporated area are two-lane roadways. Some roadway segments and intersections in the Boyes Springs/El Verano/Agua Caliente area are improved to urban standards. As of 1986 all valley roadways were operating at acceptable levels of service except for Arnold Drive from Petaluma Avenue to Boyes Boulevard and Highway 12 from West Thomson Avenue to Boyes Boulevard. Concern about future increases in traffic levels and congestion on Route 12 and other area roadways is a major land-use issue for many valley residents.

Intercity transit service is provided by Sonoma County Transit, which operates on two routes linking the south Sonoma Valley's urbanized area with Santa Rosa and with Petaluma. Transbay commute service consists of "club buses" or subscription bus service which is arranged by Golden Gate Transit.

Travel patterns in the Sonoma Valley region have been recently assessed by the Sonoma Valley Traffic Study, completed in January 1987, as well as by the General Plan Transportation Study. Traffic conditions are affected by substantial amounts of commuter travel, both to the Santa Rosa area and to Marin/San Francisco; by recreational travel; and by travel internal to the valley. Future improvements or expansions of highway capacity in the Route 12 corridor are constrained by existing development patterns in the Boyes Springs/Agua Caliente area, as well as by the relatively high costs of needed improvements. Without substantial improvements, the lack of sufficient highway capacities in this corridor could be a limiting factor for future growth in the lower Sonoma Valley.

Projected average daily traffic volumes in year 2005 on Highway 12 are 11,000 vehicles in the vicinity of Glen Ellen, 19,000 in the Boyes Springs/Agua Caliente area, and 17,000 at the Napa County line. These volumes represent increases of 22, 58, and 31 percent, respectively, over the amount of traffic existing in 1984. Volumes are projected to reach 17,000 ty year 2005 on Stage Gulch Road and 15,000 on Route 121 south of Schellville. Moderately congested

traffic flows for limited periods of time are projected on Highway 12 just north of El Verano Avenue in the Boyes Hot Springs area, on Route 121 in the Schellville area, and on Stage Gulch Road. All other roadways in unincorporated areas are projected to function at Level-of-Service "C" or better in year 2005. Although planned improvements may lessen weekend travel delays in the Highway 12 corridor, delays associated with weekend recreational travel are expected to become worse in the Stage Gulch Road and Highway 121 (Schellville) areas, where the ratios of projected summer weekend to average weekday traffic volumes are 1.15 and 1.3 respectively.

The plan includes the following policies and proposed improvements which are specific to the Sonoma Valley region:

CT-17a: The highway plan, shown in Figure CT-7i, classifies area roadways as follows:

1) Primary Arterials: State Routes 12, 121, 116 (Stage Gulch Road), and 37; Napa Road; Arnold Drive from Highway 116 to Agua Caliente Road.

2) Secondary Arterials: Arnold Drive north of Agua Caliente Road, Bennett Valley Road, Warm Springs Road, Madrone Road, Boyes Boulevard, El Verano Avenue, Petaluma Avenue, Leveroni Road, East Napa Street, 8th Street East.

3) Major Collectors: Watmaugh Road, 5th Street East, 5th Street West, East MacArthur Street.

4) Minor Collectors: Trinity Road, Grove Street, Riverside Drive, Craig Avenue, Railroad Avenue, Norrbom Road.

5) All other highways in the unincorporated area are classified as local roads.

CT-17b: Continuous, two-way, left-turn lanes shall be planned on the following roadway segments:

1) Highway 12 north of the city of Sonoma to Agua Caliente Road, and south of the city to Watmaugh Road and at its intersection with highway 121.

2) El Verano Avenue from Highway 12 to Riverside Drive

3) Arnold Drive from Madrone Road to Petaluma Avenue

4) Petaluma Avenue from Arnold Drive to Riverside Drive

5) Railroad Avenue south of its intersection with Boyes Boulevard

6) Napa Road from Broadway to 8th Street East

7) 8th Street East from East Napa Street to Highway 12/121; the railroad right-of-way paralleling this roadway may be acquired for potential public use.

CT-17c: Traffic modelling indicates that two travel lanes in each direction may be required in order to maintain an acceptable level of service on Highway 12 from the city of Sonoma northward to Thomson Lane and east of Napa Road to the Napa County line. Although the plan does not include five lanes on the segment from Thomson Lane to Sonoma, sufficient rights-of-way shall be reserved for that purpose through the establishment of a plan line. Construction of new structures shall be prohibited within the area of the plan line and required setbacks shall be measured from the plan line boundary rather than the parcel line.

CT-17d: Signalization and intersection improvements would be warranted at 21 intersections in the lower Sonoma Valley at full build-out of the land-use plan, as indicated in the Sonoma Valley Traffic Study Final Report. These improvements may be provided in a manner which responds to future growth patterns, increases in traffic levels, and associated congestion and safety problems at intersections.

CT-17e: Development projects in unincorporated portions of the lower Sonoma Valley may be approved only if it is demonstrated that they will neither cause nor make worse an unsatisfactory Level-of-Service on any highway designated as an arterial or collector. An unsatisfactory level of service shall be defined as peak period traffic service which is worse than Level-of-Service "C" for one hour or more or an intersection utilization factor of 0.9 or more. Developers of proposed projects may be required to install or finance a portion of the costs of installation of any off-site improvements that are necessary to maintain acceptable Levels-of-Service on area roadways.

CT-17f: Approvals of discretionary planning and development permits may be subject to an ordinance which establishes a requirement for payment of mitigation fees for the purpose of financing a portion of the costs of improvements necessary to maintain an acceptable Level-of-Service on designated arterial and collector roadways. The amount of any fee imposed pursuant to this policy shall bear a reasonable relationship to the traffic generated by the use and to the costs of facility improvements necessary to maintain an acceptable Level-of-Service on affected roadways.

CT-17g: Proposed roadway improvement projects are categorized on the plan map in Figure CT-7i. (Definitions of roadway improvement categories are summarized in Figure CT-3).

CT-17h: New intercounty, transbay express commute bus service shall be planned from the Sonoma Valley to employment centers in San Francisco and Marin County. Service may be provided as far northward as Glen Ellen and would serve Sonoma State Hospital and the urbanized area of Boyes Springs/Aqua Caliente/El Verano and Sonoma, continuing to the Bay Area along Routes 121 and 37 to U.S. 101 in Novato.

CT-17i: Additional intercity bus service within Sonoma County shall be planned as follows:

1) an express commute service is included in the plan to link the lower Sonoma Valley to Santa Rosa; service on the route would be added in a manner which is responsive to growth patterns, projected ridership levels, and cost factors.

2) increases in the frequency of service along existing intercity routes shall be planned as growth and associated increases in transit demand occur.

CT-17j: Detailed transportation plans may be prepared for urban unincorporated areas adjacent to the city of Sonoma as part of any future updates of specific plans encompassing those areas.

Figure CT-7i

HIGHWAY AND TRANSIT PLAN

Sonoma Valley Planning Area

HIGHWAY CLASSIFICATIONS

Existing Roadway	New Roadway	
		Primary Arterial
		Secondary Arterial
		Major Collector
		Minor Collector

ROADWAY IMPROVEMENT CATEGORIES

A	Roadway Improvement Categories (as expressed in the Circulation and Transit Element Text)
4	Number of Lanes (2 if not indicated)

PRINCIPAL INTERCITY TRANSIT ROUTES

- Existing Routes (1986)
- Proposed New Routes
- Future Transit ROW

TRANSIT SYSTEMS

SC	Sonoma County Transit
GG	Golden Gate Transit
MT	Mendocino Transit Authority

CIRCULATION AND TRANSIT ELEMENT

Sonoma County General Plan

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8.0 CIRCULATION AND TRANSIT IMPLEMENTATION PROGRAM: 1987-1992

Although many measures to implement the plan are expressed in the element's policies and have force and effect immediately upon adoption of the plan, some measures will require future actions and decisions in order to be accomplished. The following programs are intended to be carried out in the five year period from 1987 to 1992.

Circulation and Transit Proagram 1 - Ordinances Establishing Traffic Mitigation Fees

Type of Program: Zoning Ordinance
Responsible Agency: Planning and Public Works Departments
Timeframe: Ongoing
Budgetary Impact: None for preparation of ordinances; adoption would establish a new revenue source
Policy Reference: CT-6v, CT-8d, CT-11e, CT-17f

Program Description: Ordinances will be prepared for consideration by the Board of Supervisors for the purpose of establishing traffic mitigation and roadway improvement fees. Ordinances could be adopted on a countywide and/or small-area basis as traffic conditions warrant. Proposed ordinances may accompany preparation of any new or updates of existing specific plans. In general, ordinances shall require that future payment, at the time of building permit approval, of traffic mitigation fees be a condition of approval of any discretionary planning and development permits. Ordinances may be applicable to new residential units on existing lots for which there is no prior discretionary planning or development permit. The amount of any fee imposed pursuant to such ordinances shall bear a reasonable relationship to the traffic generated by a use and the costs of facility improvements necessary to maintain acceptable Levels-of-Service with the cumulative amount of development authorized by adopted plans. Ordinances for three areas were in effect as of 1986.

Circulation and Transit Program 2 - Preparation of Transportation Expenditure Plan and Ballot Measure (Boatwright)

Type of Program: Ballot measure
Responsible Agency: County Counsel, Public Works Department, Cities, MTC
Timeframe: Within the next five years to 1992
Budgetary Impact: None for preparation of Transportation Expenditure Plan and Ballot Measure; if adopted, would establish significant new revenue source earmarked for transportation improvements

Policy Reference: CT-6v

Program Description: SB 878 (Boatwright), adopted July 14, 1986, authorizes each of nine Bay Area counties, including Sonoma, to levy, upon approval of a majority vote of the electorate, a retail transactions and use tax (sales tax) increase of 0.5 to 1.0 percent to be used for public transit, state highway or local street and road projects based on a County Transportation Expenditure Plan. The purpose of this program is to initiate a process to formulate a County Transportation Expenditure Plan and to obtain consenus on its components. The process shall provide for the participation of each of the eight cities, representatives of transit agencies serving Sonoma County, Caltrans, MTC, and any other appropriate agencies. The transportation expenditure plan shall consist of a list of projects, the order of their priority, and their respective sponsoring agencies. The plan is required to specify: 1) the extent to which reasonable estimates of existing federal and state funds will be used to help finance the projects, 2) the costs of the projects, 3) the amount of the proposed tax and its duration, and 4) any bonding provisions. Tax proceeds may be used to advance construction of highway projects in the STIP. The plan and companion ballot measure would propose creation of a County Transportation Authority to administer the transportation improvement program. The plan must be taken to public hearing, to MTC for its approval, and must be approved by the Board of Supervisors and by a majority of the eight cities representing a majority of the incorporated-area population. After receiving these approvals, the plan can be placed on the ballot of a primary or general election. Taxes generated by this Act must be spent in the county of origin, except that revenues may be exchanged for federal or state funds if doing so will benefit the county.

Circulation and Transit Program 3 - Sonoma County Transit Agency

Type of Program: Transit Operat;ions
Responsible Agency: Sonoma County Transit, Department of Public Works
Timeframe: Ongoing

Budgetary Impact: No general fund impact; service financed by fare box revenue and UMTA and other programs.
Policy Reference: CT-7l, CT-7m, CT-7n, Ct-7o, CT-7p, CT-7q, CT-7r, CT-7s

Program Description: Sonoma County shall continue to maintain a transit agency as a part of the Public Works Department. The agency shall focus on intercity transit services within Sonoma County, but may also contract with cities to provide local service therein. Services may include express commute buses as well as basic intercity service. Sonoma County Transit shall be responsible for annual preparation of 5-year Transit Development Plans which conform to UMTA and MTC criteria in order to qualify for federal and state funding programs for transit.

Circulation and Transit Program 4 - Capital Improvements Program/Budget

Type of Program: Annual CIP
Responsible Agency: County Administrator, Public Works Department
Timeframe: Ongoing, annually
Budgetary Impact: Incorporated within annual budgets
Policy Reference: Various policies, highways and transit

Program Description The capital improvements program shall be utilized to establish priorities and scheduling for roadway construction projects and transit facility construction. Roadway and transit facility construction may be financed through a combination of revenue sources, including the general fund as well as categorical grants such as UMTA and TDA from federal and state programs.

Circulation and Transit Program 5 - Transportation Planning Council (TPC)

Type of Program: Administrative
Responsible Agency: Public Works Department, Board of Supervisors, City Councils
Timeframe: Ongoing
Budgetary Impact: No increase in budget allocation
Policy Reference:

Program Description: The County of Sonoma will continue to staff and coordinate a Transportation Planning Council which has as its primary purpose the coordination of public transportation services in the county. The TPC shall be responsible for overseeing the preparation of integrated, countywide 5-year Transit Development Plans and for coordinating highway and mass-transit facility improvements.

Circulation and Transit Program 6 - Specific Plan Circulation Elements

Type of Program: Specific Plans / Updates of Specific Plans
Responsible Agency: Planning and Public Works Departments
Timeframe: Ongoing, as traffic conditions warrant
Budgetary Impact: May require expenditures for technical traffic studies
Policy Reference:

Program Description: New specific plans would be required to contain a detailed plan, program, and financing arrangements for local roadway and transit improvements. Detailed traffic studies could be undertaken on a small-area basis to further delineate roadway and intersection improvements needed as a result of planned growth. Updates of existing specific plans may also include preparation of new circulation elements where appropriate. As of 1986, four detailed local-area transportation studies had been completed and precise circulation elements had been adopted for three specific plans.

PUBLIC HEARING DRAFT

Sonoma County General Plan

PUBLIC FACILITIES AND SERVICES ELEMENT

Prepared for Public Hearings by the
Sonoma County Planning Commission

December 18, 1986

Sonoma County Planning Department
575 Administration Drive
Santa Rosa, California 95401

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1.0 INTRODUCTION

1.1 AUTHORITY AND PURPOSE

Section 65303 of the California Government Code states that "the general plan may include any other elements or address any other subjects which, in the judgement of the legislative body, relate to the physical development of the county". The Public Facilities and Services Element addresses seven types of public services most directly related to physical development of the county: water, wastewater management, public education, parks and recreation, fire protection, solid waste management, and utilities. In some instances, facilities and services are owned and/or operated by the County of Sonoma, or may be provided by an agency governed by the Board of Supervisors. In other cases, facilities and services are owned and operated by independent governmental entities or private companies.

The intent of this element is to assess the status in 1986 of each of the aforementioned public services and to evaluate the abilities of service-providing agencies to accommodate projected growth. The element's goals, objectives, policies and implementation programs are designed to facilitate the timely availability of essential public services. This effort benefits the county in two ways:

(1) it provides a framework for orderly growth and development by reducing uncertainity regarding the availability and costs of essential services; and

(2) it establishes policies that integrate public service concerns into the land-use decision-making process.

1.2 RELATIONSHIP TO OTHER ELEMENTS

The Public Facilities and Services Element, together with the Land-use, Circulation and Transit, and Housing Elements, comprise the portions of the general plan that most directly address issues raised by projected population and housing growth. Linkages between these elements can be summarized as follows:

- the Public Facilities and Services Element assesses the general abilities of service-providing agencies to accommodate population and housing growth authorized by the land-use plan maps for the nine planning regions; emphasis is given to service needs projected to arise within the 20-year timeframe of the general plan.

- the Land-use and Housing Elements contain economic and demographic projections, maps and other data which are the basis for assessments of public service and facility needs in this element as well as highway and public transportion needs in the Circulation and Transit Element and aviation facility needs in the Air Transportation Element.

1.3 SCOPE AND ORGANIZATION

The following seven sections address essential public service functions to the extent permitted by information available in 1986. Each section of the element describes general supply and demand conditions for the subject service as of 1986, and evaluates available service capacities in relation to population, housing, commercial and industrial growth permitted by the land-use plan maps. With the exception of wastewater management services -- where individual sanitation districts provide the framework for analysis -- these assessments are made by planning region. Thus, district-by-district analyses of water, school and fire service needs are beyond the scope of this element. When the information presented in this element indicates a need for more detailed geographic analyses of services, this is reflected in objectives, policies and implementation measures. When there is a need for a policy for a specific sub-area, the policy statement or program is presented in the Land-use Element, in the subsection addressing the applicable planning region.

2.0 WATER SERVICES

2.1 INTRODUCTION

Adequate supplies of clean, healthful water for domestic, commercial, industrial and other urban and agricultural uses are essential if Sonoma County is to sustain economic growth while implementing other general plan policies regarding resource conservation, community-centered growth and preservation of open space. The intent of this section of the Public Facilities and Services Element is to address water supply services provided primarily by governmental entities; however, issues related to small privately-owned water systems are discussed since governmental intervention is frequently cited as a means by which the problems experienced by some small systems could be addressed. Issues related to quantity and quality of groundwater, and surface water issues not related to water supply, are addressed in the Resources Conservation Element.

Regulatory Environment. Principal agencies with regulatory functions related to water supply, distribution and quality in Sonoma County are:

California Water Resources Control Board (WRCB) - issues permits for the appropriation of surface water. In Sonoma County, WRCB permits regulate the use of water within the Russian River water system, which is the principal source of the county's urban water supply.

Regional Water Quality Control Boards (RWQCBs) - enforce federal and state water quality standards for surface and groundwaters. Sonoma County falls within jurisdiction of two separate RWQCBs: the Sonoma and Petaluma planning areas are in the San Francisco Bay region and the balance of the county is in the North Coast region.

California Department of Health Services (DOHS) - approves, inspects and enforces federal and state water quality standards for water systems with 200 or more service connections.

California Public Utilities Commission (PUC) - regulates privately-owned water companies, including the setting of water rates, review of service area boundaries, and the administration of standards for water pressure, storage capacity, line sizing, construction materials, and the quality of service.

Sonoma County Department of Public Health (DPH) - approves, inspects and enforces federal and state water quality standards for water systems with 5-199 service connections.

Wholesale Water Purveyor. The Sonoma County Water Agency (SCWA) manages and distributes Russian River water to retailers in Sonoma and Marin Counties. SCWA's prime retail customers include the municipal systems of Santa Rosa, Rohnert Park, Petaluma, Sonoma and Cotati, and the Valley of the Moon, Forestville, and North Marin Water Districts.

2.2 FACILITIES AND SERVICES: 1986

Large Water Systems. Large water systems, defined as those with 200 or more service connections, provide water services to most urbanized areas of the county, including all cities and larger unincorporated communities. The principal source of supply is Russian River water, but individual water purveyors usually have other water sources (wells, springs or streams) which augment the Russian River supply and/or serve as a back-up supply in case of drought or emergency. The Sonoma County Water Agency is the principal holder of diversionary rights for Russian River water in Sonoma County, and operates a system of water intakes and aqueducts which deliver water to contracting water systems. In 1985, WRCB permits authorized the SCWA to divert 37,544 acre feet of Russian River water; a temporary permit allowed diversion of an additional 5,884 acre feet, for a total of 43,428 acre feet. Decision 1610 of the California Water Quality Control Board, adopted in April 1986, increased the total authorized diversion of the SCWA to 75,000 acre feet annually. Table PF-1 provides summary data on the location and sources of supply of the county's large water systems.

Small Water Systems. Small water systems, those with 199 or fewer service connections, provide water service to a wide variety of users, ranging from individual businesses (eg. rural restaurants) to campgrounds, mobile home parks, rural residences and subdivisions and small unincorporated communities. Table PF-2 presents summary data on the three sub-categories of small water systems operating in Sonoma County.

Table PF-1:
Large Water Systems by Planning Region, Sonoma County, 1986

Planning Region/ Service Area	Purveyor(s)	Source(s) of Supply
Sonoma Coast/Gualala Basin		
Bodega Bay	Bodega Bay PUD	Wells
Sea Ranch	Sea Ranch Water Co.	Wells
Camp Meeker	Camp Meeker Water System, Inc.	Springs, Well
Cloverdale/N.E. County		
Cloverdale	City of Cloverdale	Wells
Geyserville	Geyserville Water Works	Well
Healdsburg & Environs		
Healdsburg	City of Healdsburg	Wells
Fitch Mountain	Fitch Mountain Water Co.	Wells, Spring
Windsor/Airport	Windsor County Water District	Wells, SCWA
Armstrong Valley	Armstrong Valley Water Company	Wells
Russian River		
Forestville	Forestville County Water Dist.	SCWA[1]
Rio Dell	Rio Dell Water Company	Well
River Road	Russian River Terrace Water Co.	Well
Guerneville/Monte Rio	Citizens Utilities Company	Wells, Springs
Santa Rosa & Environs		
Santa Rosa	City of Santa Rosa	Wells, SCWA
Larkfield-Wikiup	Larkfield Water Co.[2]	Wells, SCWA
Sebastopol & Environs		
Sebastopol	City of Sebastopol	Wells
Rohnert Park-Cotati & Environs		
Rohnert Park	R.P. Community Services Dist.	Wells, SCWA
Cotati	Cotati Public Utility	Wells, SCWA
Penngrove	Penngrove Water Cf.	SCWA
Petaluma & Environs		
Petaluma	City of Petaluma	Streams, Wells, SCWA
Sonoma Valley		
Sonoma	City of Sonoma	Wells, SCWA
Kenwood	Kenwood Village Water co.	Well, SCWA
Unincorp. Valley	Valley of the Moon W.D.	Wells, SCWA

Notes: 1. SCWA = Sonoma County Water Agency
2. Owned by Citizens Utilities Company
Source: California Department of Health Services, 1986

Table PF-2
Characteristics of Small Water Systems, Sonoma County, 1986

Small Water System Category	Number of Connections	Population Served	Number of Systems Operating in Sonoma County, 1986
non-community	1	25+ non-residents, 60+ days/year	200
state small community	5-14	25 or less	65
small community	15-199	25+	155

Source: Sonoma County Department of Public Health, 1986

Forms of ownership of small water systems include privately owned companies, mutual companies and special districts; in 1985, over 90 percent of all small community systems were in private or mutual ownership. Since per capita costs of operation are usually higher for small systems, these systems can experience problems due to a limited revenue base for financing improvements to supply and distribution systems and a lack of of permanent operations and maintenance staff. Of the 40 small systems subject to moratoria on new connections in 1984, all but one were under private or mutual ownership.

2.3 SERVICE DEMANDS AND FACILITY NEEDS: 1986-2005

Large Water Systems. The ultimate source of water for the SCWA is runoff from precipitation in the Eel and Russian River watersheds. The primary function of SCWA storage and transmission facilities is to store water collected during the winter rainy season -- when precipitation is high and demand relatively low -- for distribution during the dry summer season. Unincorporated areas served by SCWA water are limited to Forestville, Larkfield-Wikiup, Kenwood, Penngrove, the Sonoma County Airport area, the South Park C.S.D. and unincorporated communities of the southern Sonoma Valley served by the Valley of the Moon Water District. The SCWA's recent applications to the State Water Resources Control Board (WQCB Decision 1610, April 17, 1986) have indicated that total supply would be adequate to serve projected demand. However, the data must be interpreted with caution, since it reflects average annual rates of precipitation. The SCWA has indicated that severe drought conditions, such as those that occurred in 1924 and 1977, could require some curtailment of domestic and agricultural water use in the middle reaches of the Russian River between the east fork and Dry Creek. Computer modelling studies conducted by SCWA indicated that such conditions could be expected to occur in two years out of each 56 year period following year-2000. In approving Decision 1610, the WQCB required maintenance of specified minimum summer flows in all reaches of

the river between the east fork and the Pacific Ocean. The WRCB action also required SCWA to develop and implement a master water conservation plan for its service area by September 1987. It should also be noted that the preceding discussion does not take into account the groundwater resources of the SCWA or the municipal systems it serves.

Long-range (20-year) facility needs of the SCWA are addressed in the "Water Transmission System Capital Expenditure Program" published in 1981. This document describes a variety of storage and transmission projects needed to meet the agency's contractual obligations, and includes discussions of financing and phasing issues. A revision of the program currently in effect is contemplated following formal adoption of proposed amendments to SCWA's WQCB permits. Short-range (1-5 year) improvement needs are addressed in Sonoma County's Capital Improvement Program document.

Small Water Systems. Since most existing small water systems are not designed or intended to accomodate substantial growth within their service areas, planning concerns are limited to:

(1) Water supply, quality, and distribution system problems and how they might be resolved; and
(2) Methods by which problems may be avoided in any new systems.

Data collected by the Sonoma County Department of Health and discussed in Section 2.2 indicate that the equipment and water quality problems experienced by existing systems could usually be attributed to an inadequate revenue base, and that such problems appeared to be linked to the system's form of ownership. Planning for improvements to small water systems occurs on an ad hoc basis as deficiencies in existing systems are identified.

2.4 GOALS, OBJECTIVES AND POLICIES

Issues: Issues related to large water systems primarily involve the cumulative long-term effects of the SCWA's diversion of Russian River water, particularly in drought years. Potential problems in periods of prolonged drought include possible curtailment of domestic and agricultural water supplies in areas of the county north of Dry Creek, and possible limitations on discharges of treated wastewater by the Santa Rosa Regional Plant, where winter effluent disposal operations prior to 1986 were dependent upon availability of a 1,000 c.f.s. flow in the Russian River. Related issues include the potential effects of low river flows on plant and animal life, fisheries and recreation opportunities.

For small water systems, the principal issues are the identification of remedies for existing facility or water quality problems, including evaluation of future facility needs and financing options; and the assessment of the implications of these problem systems for the approval of new small systems.

Goal PF-1: It is a goal of Sonoma County to encourage the provision of clean, healthful water in quantities sufficient to satisfy current and projected domestic, commercial and industrial needs in a manner that preserves the supply and quality of surface and groundwaters essential for maintaining riparian habitats, conserving water-dependent resources and enhancing recreation opportunities.

Objective PF-1.1: It is the County's objective that all water supplied by county-administered agencies comply with minimum federal and state water quality standards.

Objective PF-1.2: It is the County's objective that all diversions of Russian River water by county-administered agencies comply with the permit requirements and conditions established by the California Water Resources Control Board.

Objective PF-1.3: It is the County's objective that annual withdrawals of groundwater by water purveryors not exceed the annual recharge capabilities of affected groundwater basins.

Objective PF-1.4: It is the County's objective to identify, investigate and assist in the resolution of water supply and quality problems of existing small water systems and to formulate policies which will preclude the occurence of such problems in any new small systems which may be established in the future.

The County shall employ the following policies related to water delivery systems:

PF-1a: The timely provision of water services shall be facilitated by directing or encouraging the preparation of master facilities plans by the SCWA and other agencies in the county which provide water on a wholesale or retail basis. The content of these plans shall include:

1) an identification of existing and planned ultimate service area boundaries in a manner consistent with the policies and maps of the Land-use Element; in general, such boundaries shall not include lands where permitted residential densities are less than one unit per acre.

2) a 20-year forecast of growth likely to occur within service area boundaries, in five-year increments; such forecasts shall be compatible with those expressed in the Land-use Element.

3) an analysis of facility needs for the planning period to 2005 in five-year increments and at build-out based on the applicable general plan land-use plan map.

4) an analysis of any relationship between water supply and quality needs and sewage treatment and disposal capacities of the applicable wastewater management agency.

5) an assessment of the potential environmental effects of existing or planned groundwater usage.

6) an estimate of the costs of needed facility improvements, and evaluation of possible revenue sources and potential effects on annexation fees, connection fees and service charges.

PF-1b: The County shall participate in the California Water Quality Control Board's permit process, in an effort to ensure that existing and future diversions of Russian River water occur in a manner that protects and -- to the extent feasible -- enhances the use of river water for riparian habitats, agriculture, resource production and recreation.

PF-1c: In order to provide for the orderly expansion of water service areas, the following criteria shall apply to proposed expansions of the water service areas of agencies under County jurisdiction, and shall be the basis for County comments to the LAFCo on any proposal by other agencies to expand their spheres of influence (SOI):

1) Expansion of a SOI to include existing development on parcels that are divided by, or contiguous to, a sphere of influence boundary shall be permitted only when:

   a) the subject property is designated for a residential density of one or more units per acre, or for other urban uses, on the land-use plan map; or well yields are of insufficient quantity or quality to serve existing development; and

   b) the applicable agency provides written certification of its ability to serve the area proposed for annexation.

2) Expansion of a SOI for the purpose of serving new development shall be permitted only when:

   a) the subject property is designated for a residential density of one or more units per acre, or for other urban uses, on the land-use plan map;

b) a study of the potential environmental, public service and financial effects of the proposal has been prepared;

c) the applicable agency has provided written certification of its ability to serve the area proposed for annexation; and

d) project proponents have agreed to appropriate arrangements for financing and constructing all improvements to the system which would be necesary.

The preceding criteria shall not be applicable to any service area or agency for which the County or the LAFCo have adopted a "no annexation" policy; in those instances, proposals for a service area expansion shall not be approved.

PF-1d: It is the general policy of the County to discourage the formation of new water service agencies; new water service areas or the reorganization of existing agencies in unincorporated areas may be approved only if the following criteria are met:

1) the subject area has existing development and small parcel sizes.

2) The RWQCB, State Department of Health Services or County Department of Public Health have identified a water supply or quality problem within the subject area and have determined that these problems either:
   a) constitute a public health hazard; or
   b) prevent development consistent with land-use plan map designations.

3) residents and property owners have requested that potential measures to resolve water problems be evaluated.

Under the above conditions, the Board of Supervisors may authorize a study of the affected area to determine: the extent of water supply and quality problems; options regarding the type and capacities of water supply and distribution facilities that could resolve identified problems; options regarding the type of agency best suited to address identified problems; and general assessment of the costs, revenue potential, land-use and environmental implications of all options. Any facility plan shall be designed to be consistent with the land-use plan map and policies for the area, including growth projections.

PF-1e: In reviewing proposals for new development within the service area or SOI of a water service agency, applications for discretionary development permits shall not be deemed complete unless and until the affected agency has certified in writing that:

1) the capacities of existing water supply and distribution facilities are adequate to serve the proposed development; or that
2) Improvements to existing facilities necessary to serve the proposed development are planned and will be operational prior to occupancy of the development.

PF-1f: In order to make efficient use of water resources and to reduce the amount of capacity needed for wastewater treatment and disposal facilities, the County shall:

1) require all new uses and structures to incorporate water-conserving design features and mechanical equipment in accordance with the provisions of the Building and Plumbing Codes.
2) encourage, to the extent practicable, the retrofitting of existing uses and structures with water-conserving devices.

PF-1g: In reviewing projects of governmental agencies which provide water services for conformity with the general plan pursuant to Section 65402 of the California Government Code, a finding of consistency may be made only if the proposed project:

1) is designed to serve development at the densities or intensities and locations depicted on the land-use plan maps;

2) will not induce population growth beyond that projected for the affected area by the Land-use Element; and

3) substantially complies with other applicable general plan goals, objectives and policies.

Parcels created solely for the purpose of accommodating water storage and/or transmission facilities shall not be included in applying the residential density policies of the land-use plan map.

PF-1h: The County shall monitor and -- to the extent permitted by law and the availability of staff -- participate in the planning of water supply and distribution facilities of water service agencies whose operations extend to lands in unincorporated portions of the county.

PF-1i: In cases where the Board of Supervisors finds that water supplied by a water service agency has severely or persistently violated federal and/or state water quality standards or is not provided at adequate pressure, the County shall initiate a review of the agency's ability to serve existing and potential new development. Where necessary or appropriate, the County may: 1) prohibit plan amendments and rezonings that would increase the permitted density or intensity of development; 2) require implementation of a development phasing plan; or 3) impose a moratorium on approvals of discretionary planning permits and/or building permits for new structures. The purpose of such restrictions shall be to ensure a rate of growth consistent with maintenance of acceptable water quality and/or pressure standards.

PF-1j: In considering any proposal for the creation of a new water system for the purpose of addressing water quality, supply or pressure problems associated with dwellings or uses existing in 1986, formation of financially self-supporting systems owned and operated by a governmental entity shall be preferred over privately- or mutually-owned systems. Establishment of new mutual or privately-owned water systems to serve new subdivisions shall be discouraged.

PF-1k: The County shall monitor, to the extent practicable, groundwater usage to assess the potential for exceeding rechange capabilities and to prevent overdrafting of groundwater supplies.

3.0 WASTEWATER MANAGEMENT SERVICES

3.1 INTRODUCTION

Wastewater management refers to the process by which water used for domestic, commercial and industrial purposes is collected, treated to remove organic and inorganic waste materials, and returned to the environment. The term includes all of the technical, administrative and regulatory mechanisms necessary to protect the county's surface and groundwater resources from biological and chemical pollutants.

Regulatory Context. Untreated or improperly treated wastewater contains bacteria, viruses, chemicals and nutrients that can cause human diseases, kill or injure plants, animals and fish, and produce surface waters that are discolored and/or odorous. Since all wastewater -- whether treated in an urban sewerage system or a septic system serving a single rural residence -- is ultimately returned to the environment, government at all levels has a vital interest in assuring proper wastewater management. Principal agencies having regulatory authority over wastewater management in Sonoma County are:

- California Regional Water Quality Control Boards (RWQCB's) - Enforce federal clean water standards; issue National Pollution Discharge Elimination System (NPDES) permits; develop and enforce wastewater discharge requirements for systems discharging more than 2500 gallons per day of treated wastewater, or discharging to surface waters. The Petaluma and Sonoma planning areas fall within the boundaries of the San Francisco Bay RWQCB; the balance of the county is in the North Coast Basin RWQCB.

- California Department of Health Services (DOHS) - Provides technical assistance to RWQCBs in developing local wastewater discharge requirements; enforces state water quality standards where human contact is involved.

- Sonoma County Department of Public Health (DPH) - Approves, inspects and monitors performance of wastewater treatment systems serving individual parcels and discharging to groundwater.

3.2 FACILITIES AND SERVICES: 1986

Twelve agencies controlled by four different types of administrative entities provide wastewater management services in unincorporated urban areas of Sonoma County. Agency types include county service areas (CSAs), county sanitation districts (CSDs), municipal agencies and independent sewer districts. In two cases, agencies which primarily serve incorporated areas (the Santa Rosa regional system and the City of Petaluma) also have contracted to serve adjoining unincorporated communities (South Park CSD and Penngrove CSA). The Santa Rosa regional system also by contract serves the cities of Rohnert Park, Cotati, and Sebastopol. As used in this element, the term "agencies administered by the county" includes only CSAs and CSDs whose facilities are operated by county staff. Tables PF-3 and PF-4 summarize the operational characteristics and dry weather capacity status of sewer systems operated by agencies in unincorporated areas. All these systems perform the following functions:

- collection of raw wastewater (influent) through a system of trunk and lateral pipelines.

- treatment of influent at a wastewater treatment facility to remove most solid and suspended waste material, including most viral and bacterial organisms.

- discharge of treated wastewater (effluent). Discharges are used for spray irrigation or are released into surface or groundwaters, which can affect the use of these waters for drinking, recreation and resource production. Some treatment facilities also produce concentrated residual solids -- or sludge -- as a by-product; sludge is disposed of at the central county dump (a Class II landfill).

Table PF-3

Wastewater Treatment and Disposal Methods, 1985

Sanitation District	Type of Treatment Facility[1]	Effluent Disposal Method[2] Summer	Winter	Receiving Waters for Effluent	Sludge Disposal Method
Bodega Bay PUD	AS/PS+	SI	SI	Groundwater	County dump
Occidental CSD	AL/S	SI	SWD	Groundwater; Dutch Bill Creek	None needed
Sea Ranch CSA					
Central Facility	AL/S+	SI	SI/S	Groundwater	None needed
North Facility	AL/S+	SI	SI/S	Groundwater	None needed
Geyserville CSA	AL/S	PP	PP	Groundwater	None needed
Windsor Water Dist.	AL/PS	SI	SWD	Groundwater; Russian River	None needed
Forestville CSD	AL/S	SI	SWD	Groundwater; Green Vly Creek	None needed
Russian River CSD	AS/S+	SI	SWD	Groundwater; Russian River	County dump
CSA 31 (Airport)	AL/S	SI	SI	Groundwater	None needed
South Park CSD	AS/PS+	SI	SWD	Groundwater; Russian River	County dump
Graton CSA	AL/S	S	SWD	Green Vly Creek	None needed
Penngrove CSA	AL/PS	SWD	SWD	Petaluma River	None needed
Sonoma Valley CSD	AS/S	SWD[3]	SWD	Schell Slough	County dump

Notes:

1. AS = activated sludge facility; AL = aerated lagoon facility; P = primary treatment, S = secondary treatment (includes disinfection); S+ = advanced secondary treatment.
2. SI = spray irrigation; SWD = discharge to surface waters (at dilution of 100:1 under specified conditions); PP = percolation ponds; S = stored for later release.
3. spray irrigation plan for summer flows in planning.

DN:TBLPF.3

Table PF-4

Dry Weather Capacity Status of Wastewater Treatment Facilities Serving Unincorporated Areas, 1986 and 2005

Wastewater Management Agency	Dry Weather Design Capacity or Contracted Allocation, 1986 (MGD)	Average Daily Dry Weather Flows, 1985 (MGD)	Percent of Capacity or Allocation Utilized 1986	Estimated Service Area Population, 2005	Estimated Average Daily Dry Weather Flow, 2005 (MGD)[1]	Estimated Percent of 1986 Capacity or Allocation Needed, 2005
Sonoma Coast/Gualala Basin						
Bodega Bay PUD	.355[2]	.131	37	1,850	.225	63
Occidental CSD[2]	.028[3]	.021	75	130	.028[4]	100
Sea Ranch CSA						
Central Facility	.015[2]	.003	20	375[5]	.033[5]	220
North Facility[1]	.160[2]	.004	3	1,465[5]	.130[5]	81
Cloverdale/N.E. County						
Geyserville CSA[2]	.250[3]	.062	25	600	.078	31
Healdsburg and Environs						
Windsor Water Dist.	.750[2]	.440	59	24,100	2.75	367
Russian River Area						
Russian River CSD	.510[3]	.260	51	2,800	.392	77
Forestville CSD	.085[3]	.033	39	950	.185	218
Santa Rosa and Environs						
CSA 31 (Airport)	.300[3]	.140	47	8,200	1.09	363
South Park CSD	1.270[3]	.918[6]	72	5,800[7]	.756[6]	60
Sebastopol and Environs						
Graton CSA	.140[3]	.067	48	1,050	.093	67
Rohnert Park/Cotati and Environs						
Penngrove CSA	.100[3]	N/A[8]	N/A[8]	1,400	.136	136
Sonoma Valley						
Sonoma Valley CSD	3.000[3]	2.300[9]	77	26,100[10]	3.368[10]	112

1. Source: Sonoma County Planning and Public Works Departments
2. Source: California Regional Water Quality Control Board, North Coast Region.
3. Source: Sonoma County Department of Public Works; for Penngrove CSA and South Park CSD reflects maximum allocation of treatment plant capacity, regardless of season, per 1986 agreements with Cities of Petaluma and Santa Rosa.
4. Projected flow for year 2002, per Final Project Report, Occidental CSD Facility Plan, 1982.
5. Assumes build-out of lots intended to be served by these facilities.
6. 1983 estimate by City of Santa Rosa.
7. Reflects projected annexations by City of Santa Rosa
8. N/A means not available.
9. Summer discharges of treated effluent into Schell Slough are in violation of RWQCB discharge requirements.
10. Includes City of Sonoma; does not include Eighth Street East industrial area. Treatment facility has pre-treatment storage capacity of 100 acre feet (385 million gallons).

DN:TBLPF 4

The manner in which wastewater is collected and treated, including facility design, the biochemical content and method of disposing of treated effluent and sludge, and the effect of effluent on receiving waters, is primarily regulated by the North Coast and Bay Area RWQCBs through waste discharge requirements established for each treatment facility. The RWQCBs have the authority to fine agencies whose operations violate discharge requirements; when warranted by severe or persistent violations, the RWQCB is empowered to impose moratoria on new connections to affected systems.

3.3 SERVICE DEMANDS AND FACILITY NEEDS: 1986-2005

Table PF-4 shows the average dry weather capacity status of wastewater treatment facilities serving unincorporated areas, along with estimated flows for year-2005. Although peak dry and wet weather flows can exceed average dry weather flows by 5-10 times, it is important to note the following:

- Treatment facilities are generally designed to accommodate peak flows.

- There is relatively little variation in the waste content of flows under wet and dry weather conditions. Peak wet weather flows include stormwater flows resulting from infiltration, which can vary from system to system depending on the age, type and design of collection and treatment facilities. For these reasons, peak flows require less detention time in most treatment facilities.

- During the floods of Spring 1986 most facilities handled peak wet weather flows adequately; only two violations of RWQCB discharge requirements were reported to the RWQCB: shut-down of the Russian River treatment facility occurred when most pump stations were flooded, and a trunk line in the Sonoma Valley suspended over Sonoma Creek ruptured, causing a discharge of raw wastewater into the creek.

The estimates of future wastewater flows presented in Table PF-4 are intended to indicate only the approximate scale of needed improvements to existing treatment facilities. Precise facility needs (including wastewater collection and effluent disposal facilities) can vary considerably, depending on the characteristics of each service area, and are appropriately addressed by a master facility plan for each wastewater management agency. In 1986, the following wastewater management agencies had master facility plans: Bodega Bay PUD, Occidental CSD, Sea Ranch CSA, Forestville CSD, CSA 31 (Airport/Larkfield/Wikiup), and the Sonoma Valley CSD; not all of these plans were recent, and thus they may not address the entire 1986-2005 planning period of the general plan.

Construction costs for existing facilities were financed by a combination of federal, state and local sources, sometimes including bond issues and assessment districts. Federal and state Clean Water Act funds typically provided 75 percent of costs for treatment facilities. Since future federal

funding of wastewater management facilities is likely to be available only in cases of extreme need, increased reliance on local funding sources is unavoidable. As of 1986, the primary source of funding for capital improvements was sewer connection fees, which totaled $2000 per single-family residence in most CSAs and CSDs, but ranged to a high of $4800 in those portions of CSA 31 (Airport/Larkfield/Wikiup) not included in Sewer Assessment District No. 1.

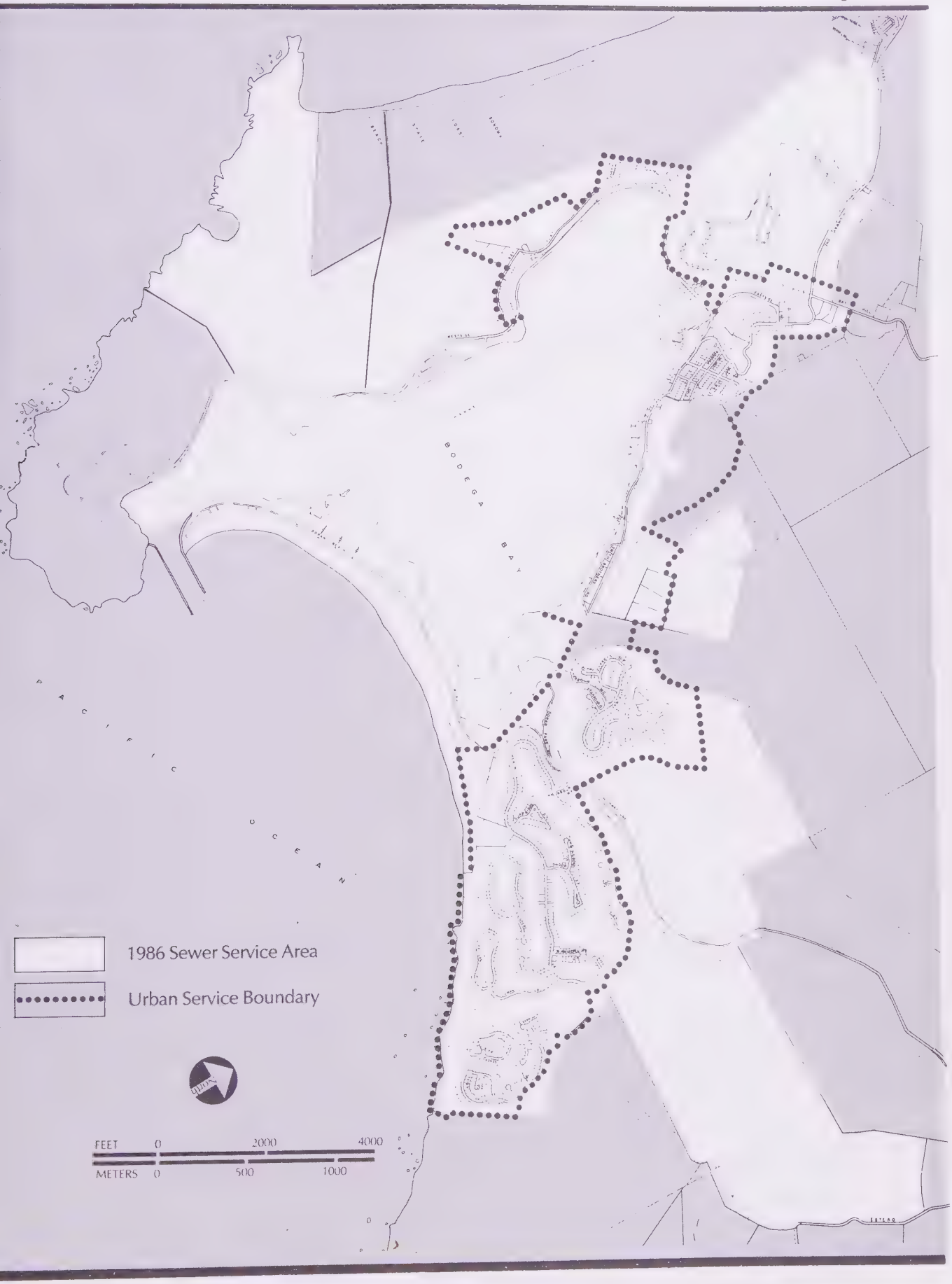
3.4 GOALS, OBJECTIVES AND POLICIES

Issues. Although RWQCB discharge requirements are developed with the technical assistance of the California Department of Health and other agencies, questions have arisen regarding effluent and sludge quality standards and disposal methods. These include the cumulative effect on water quality of effluent discharges into the Russian River (discharging systems shown in Table PF-4, and additionally the municipal systems of Healdsburg, Cloverdale and Ukiah); the weather dependence of current effluent disposal methods; the ability of existing facilities to handle peak dry and wet weather flows; the long-term environmental effects of effluent disposal by spray irrigation and sludge disposal at the county dump; and the ability of existing wastewater systems to accommodate projected growth. Other issues include the County's role in the planning of wastewater facilities serving unincorporated areas that are operated by other agencies; the extent to which the County has the legal authority or financial capability to require effluent quality levels higher than those prescribed by RWQCB discharge requirements; costs and financing options for improvements to existing systems needed to accommodate projected growth; and criteria for any future expansions of sewer service areas beyond the urban service boundries depicted on Figures PF-1a through PF-1l.

Directive: The Public Facilities Element shall establish policies which will promote development of and management practices for wastewater facilities which are environmentally sound and cost-effective, in a manner which will protect the health and safety of residents and preserve the quality of groundwater and surface waters.

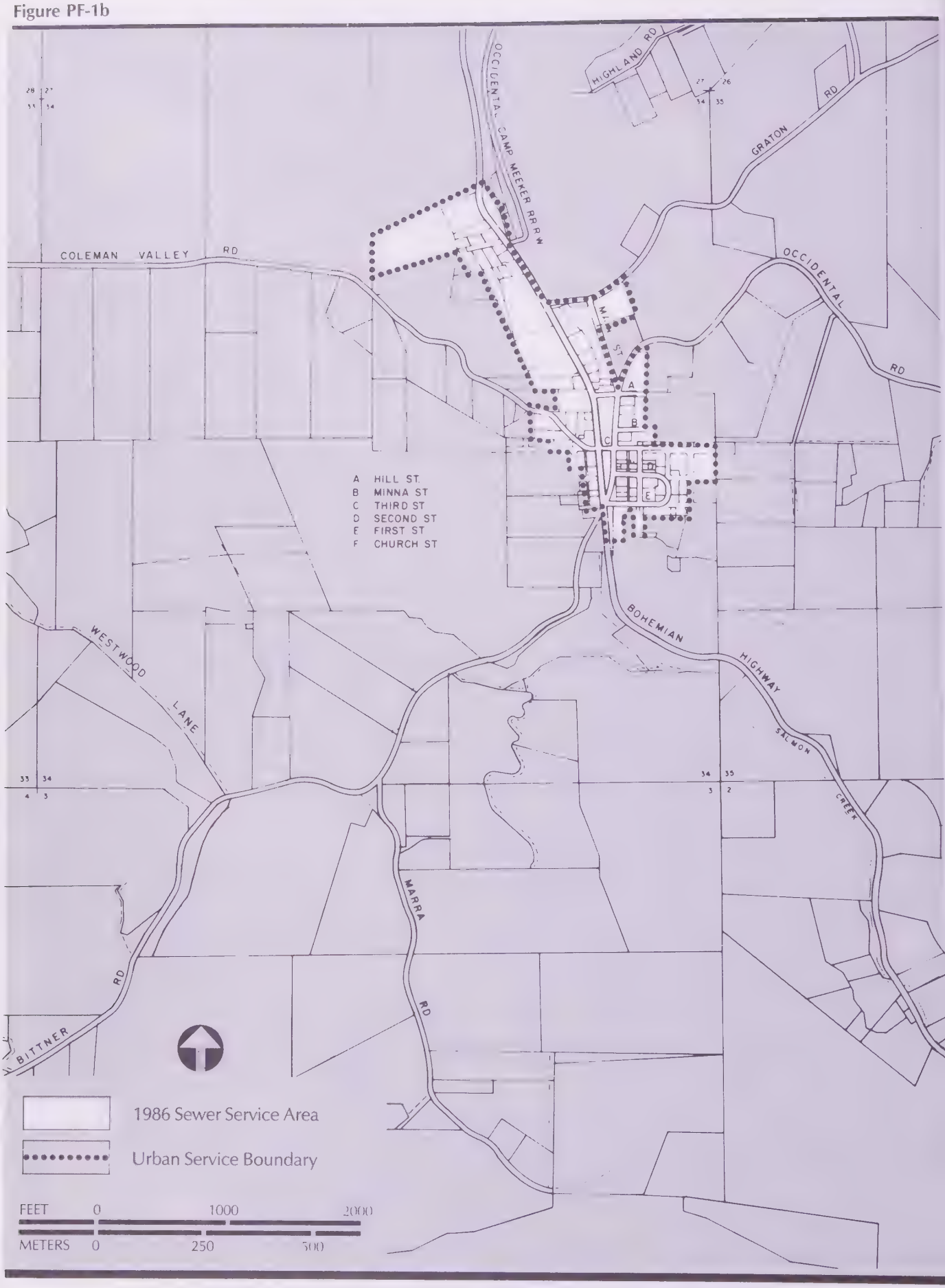
Goal PF-2: It is a goal of Sonoma County to support the provision of wastewater collection, treatment and disposal facilities adequate to meet the current and projected future needs of unincorporated urban communities in a manner that preserves -- and to the extent feasible -- enhances water quality and the natural environment.

Objective PF-2.1: It is the County's objective that all wastewater collection, treatment and disposal facilities administered by the County and its agencies operate in compliance with waste discharge requirements established by the Regional Water Quality Control Board.



BODEGA BAY PUBLIC UTILITY DISTRICT

Figure PF-1b



OCCIDENTAL SANITATION DISTRICT

Objective PF-2.2: It is the County's objective that improvements to existing wastewater management facilities needed to accommodate projected growth be planned and undertaken in a timely manner consistent with the land-use plan maps.

Objective PF-2.3: It is the County's objective that projected urban growth through year-2005 be accommodated within the urban service boundaries depicted on the land-use plan maps and in Figures PF-1a through PF-1l.

The County shall employ the following policies related to sewer services:

PF-3a: The County shall prepare or encourage the preparation or updating of master facility plans for all wastewater management agencies which provide service or discharge treated effluent in unincorporated areas. The contents of these plans shall include:

1) an identification of existing and planned ultimate service area boundaries consistent with the land-use plan map and policies.
2) a 20-year forecast of the growth likely to occur within service area boundaries, preferably in five-year increments.
3) an analysis of 20-year facility needs in relation to service demands, in five-year increments and at build-out of the applicable general plan's land-use plan map.
4) a statement of the design parameters of collection, treatment and disposal facilities, including an indication of the amount of flow and/or weather conditions that would result in violation of waste discharge requirements.
5) An estimate of the costs of needed facility improvements, including possible revenue sources and potential effects on annexation fees, connection fees and service charges.

PF-2b: The County of Sonoma's 5-year capital improvements program, in conjunction with the master plans for wastewater management facilities, shall be used as the means of ensuring timely improvements to existing facilities of county-administered wastewater management agencies.

PF-2c: It is the County's intent to participate in the development of waste discharge requirements for facilities serving or discharging effluent in unincorporated areas. Further, it is the County's policy that such facilities be designed to comply with duly established waste discharge requirements. Where appropriate and feasible, the Board of Supervisors may direct that studies of facility design options for systems administered by the County or its agencies consider the potential benefits and costs of achieving a higher quality standard than that required by RWQCB waste discharge requirements.

PF-2d: In order to provide for the orderly expansion of existing sewer service areas, the County shall establish criteria for any future expansions of their spheres of influence. The following criteria shall apply to proposed expansions of the SOI of County-administered agencies, and shall be the basis of County comments to the LAFCO on proposals by other governmental entities:

1) Expansions for the purpose of serving existing dwellings on parcels contiguous to the existing service boundary may be approved only if:

   a) The Sonoma County Department of Public Health has verified the existence of a failed septic system or a pattern of failed systems on contiguous lots, and that the failure constitutes a public health hazard.

   b) There is no reasonable means of eliminating the public health hazard other than connection to the sewerage system.

   c) The owner(s) of the parcel(s) to be annexed has (have) signed an agreement acknowledging that the purpose of the annexation is to remedy a public health hazard associated with existing dwellings, not to accommodate additional development.

   d) Where the land-use plan map does not permit additional residential development, the owner(s) of the parcel(s) to be annexed has (have) agreed to initiate a rezoning to the "B-7, frozen lot size" combining district.

   e) The affected agency has provided written certification of its ability to serve the parcel(s) proposed for annexation.

The preferred means of extending services to parcels with failing septic systems shall be an out-of-service-area agreement, rather than annexation.

2) Expansions for the purpose of serving new urban development may be approved only if:

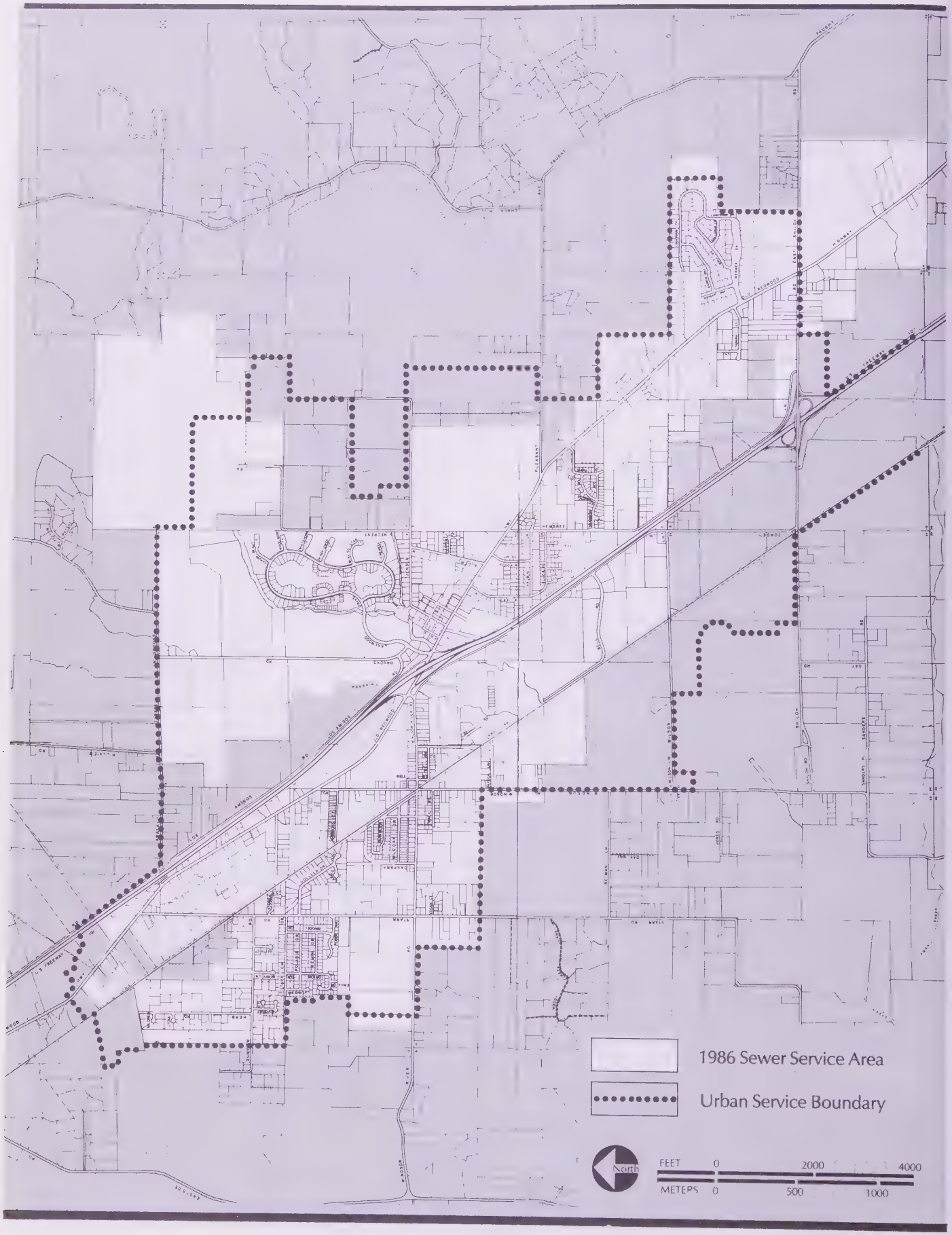
   a) The land-use plan map designates the land within an urban service area.

   b) The parcel(s) proposed for annexation is are contiguous to the existing service area boundary.

   c) A study of the potential environmental, public service and financial effects of the proposal has been prepared.

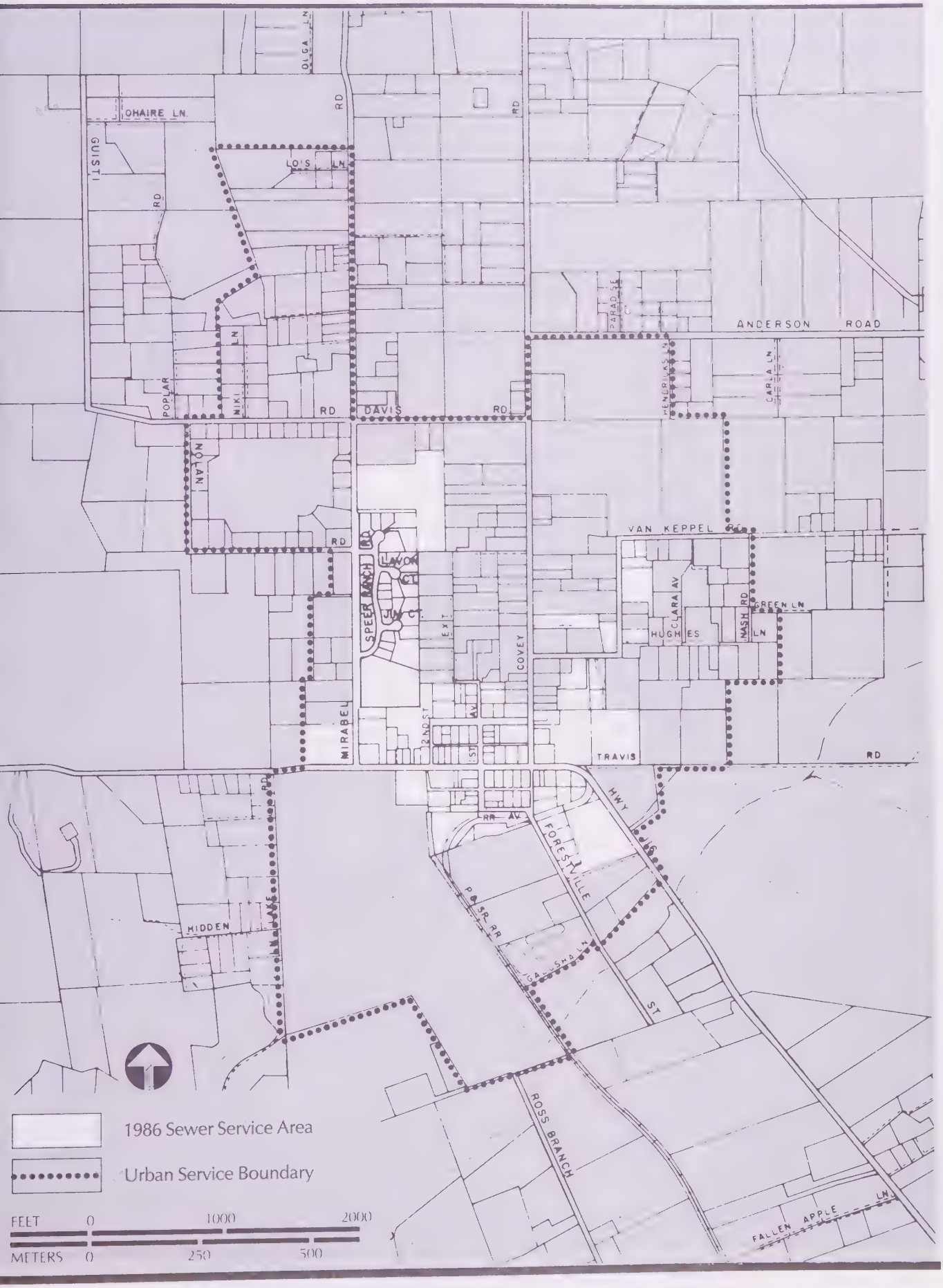
COUNTY SERVICE AREA 26 (GEYSERVILLE)

Figure PF-1d



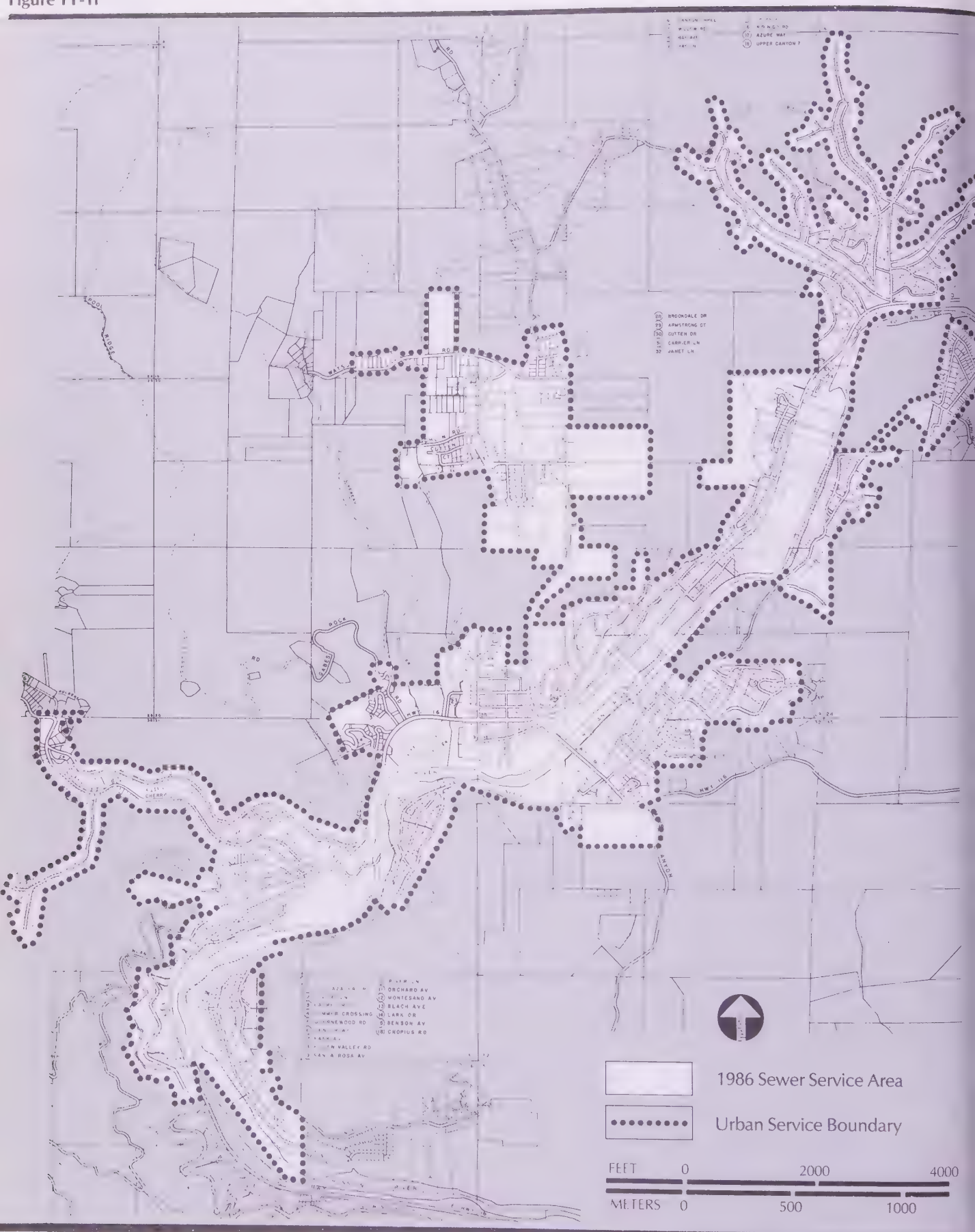
WINDSOR COUNTY WATER DISTRICT

Figure PF-1e



FORESTVILLE SANITATION DISTRICT

Figure PF-1f



RUSSIAN RIVER SANITATION DISTRICT

d) The affected agency has provided written certification of its ability to serve the area proposed for annexation.

e) Project proponents have agreed to appropriate arrangements for financing and constructing necessary improvements to the system or pro rata share thereof.

The preceding criteria shall not apply when the County or the LAFCo have adopted a "no annexation" policy for a specific service area, in which case proposals for a service area expansion shall not be approved.

PF-2e: The formation of new CSAs or other wastewater management entities in unincorporated areas may be considered only when the RWQCB, State Department of Health Services or County Department of Public Health: 1) have identified a pattern of septic system failures within a defined geographic area having an existing residential density of more than two units per acre and 2) determined that the failures constitute a public health hazard. Under these conditions, the Board of Supervisors may authorize a study of the affected area to determine: the extent of wastewater management problems; options regarding the types and capacities of collection, treatment and disposal facilities needed to address identified problems; options regarding the type of agency best suited to address identified problems; and an assessment of the cost, revenue, land-use and environmental implications of all options. Any facility plan shall be designed to be consistent with the land-use plan map and policies for the area.

PF-2f: Notwithstanding the provisions of Policies PF-2d and PF-2e, the formation or expansion of sewer service areas within a 100-year floodplain, as defined by the most recent federal flood insurance rate maps, shall be discouraged.

PF-2g: In order to conform to provisions of this plan, any application for a discretionary development permit within a sewer service area or its SOI, including but not limited to use permits, variances and subdivisions, shall not be deemed complete unless and until the applicable agency has certified in writing that:

1) The capacities of existing wastewater collection, treatment and disposal facilities are adequate to serve the proposed development without violating RWQCB waste discharge requirements; or that

2) Improvements to existing facilities necessary to serve the proposed development are planned will operational prior to occupancy of the development.

PF-2h: Building permits for new uses or structures on parcels located within a sewer service area shall not be issued unless and until the affected agency certifies in writing its intent to provide a service connection for the use or structure.

PF-2i: In cases where the Board of Supervisors finds that the facilities of a wastewater management agency have severely or persistently violated RWQCB waste discharge requirements, the County shall initiate a review of the agency's ability to serve existing and potential new development. Where necessary and appropriate, implementation of a development phasing plan may be required or a moratorium may be imposed on approvals of discretionary planning permits and building permits for new structures located in unincorporated portions of the agency's service area; The purpose shall be to ensure a rate of growth that will not result in violation of RWQCB discharge requirements.

PF-2j: In order to reduce needed capacities at wastewater treatment, collection and disposal facilities serving uinincorporated areas, the County shall:

1) require, to the extent practicable, all new uses and structures to incorporate water-conserving design features and mechanical equipment.

2) encourage the retrofitting of existing uses and structures with water-conserving devices.

3) require that new wastewater lateral and trunk collection lines be designed to allow the minimum feasible amount of inflow and infiltration into the wastewater collection system.

4) periodically inspect existing lateral and trunk collection lines to identify areas subject to excessive inflow and infiltration and remedy identified problems as feasible.

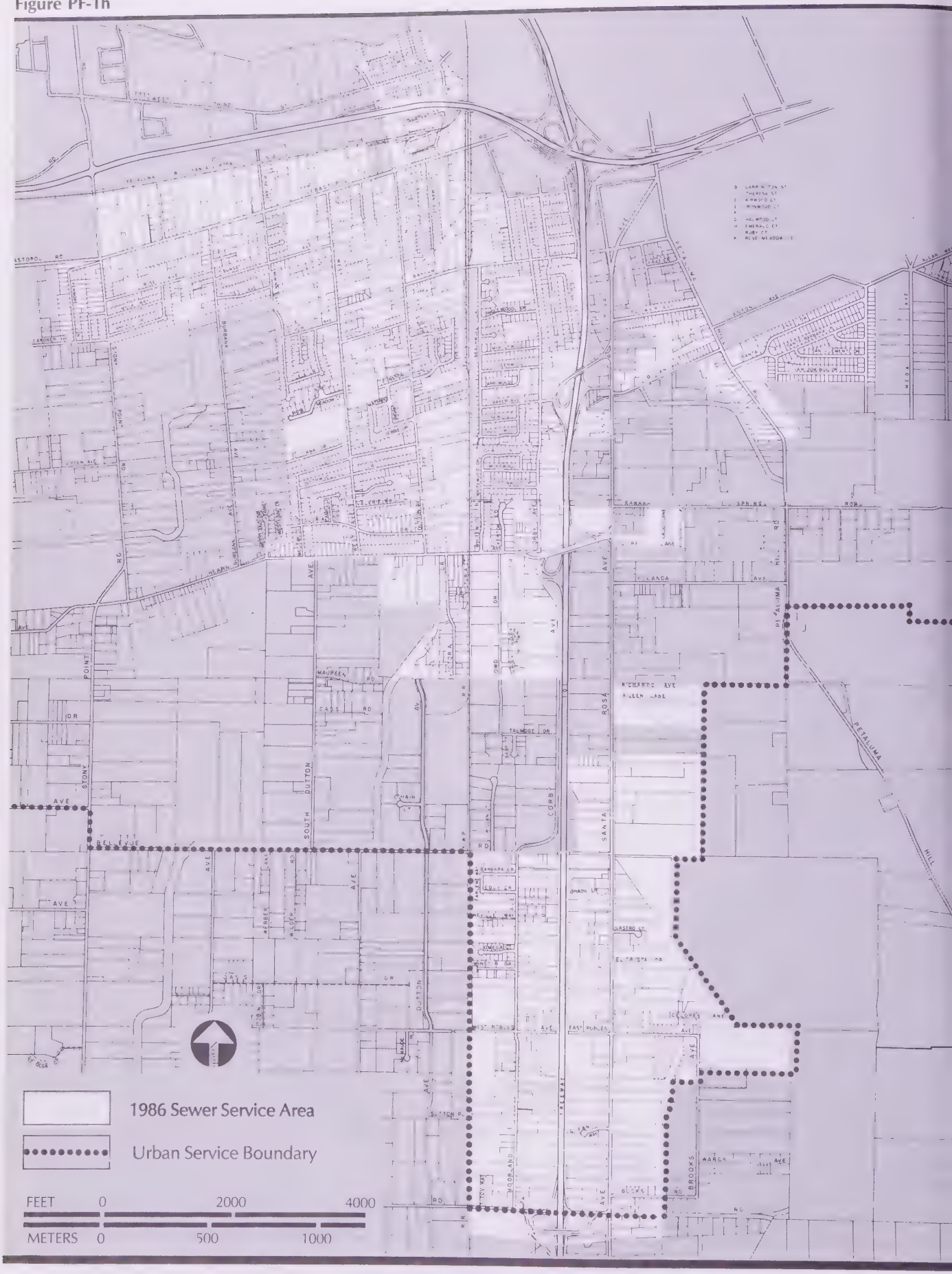
PF-2k: In order to be determined to conform to the provision of this plan, pursuant to Section 65402 of the California Government Code, projects of wastewater management agencies shall be required to conform to the following criteria:

1) the project is designed to serve only that development which is within the boundaries of an urban service area as depicted on the land-use plan map.

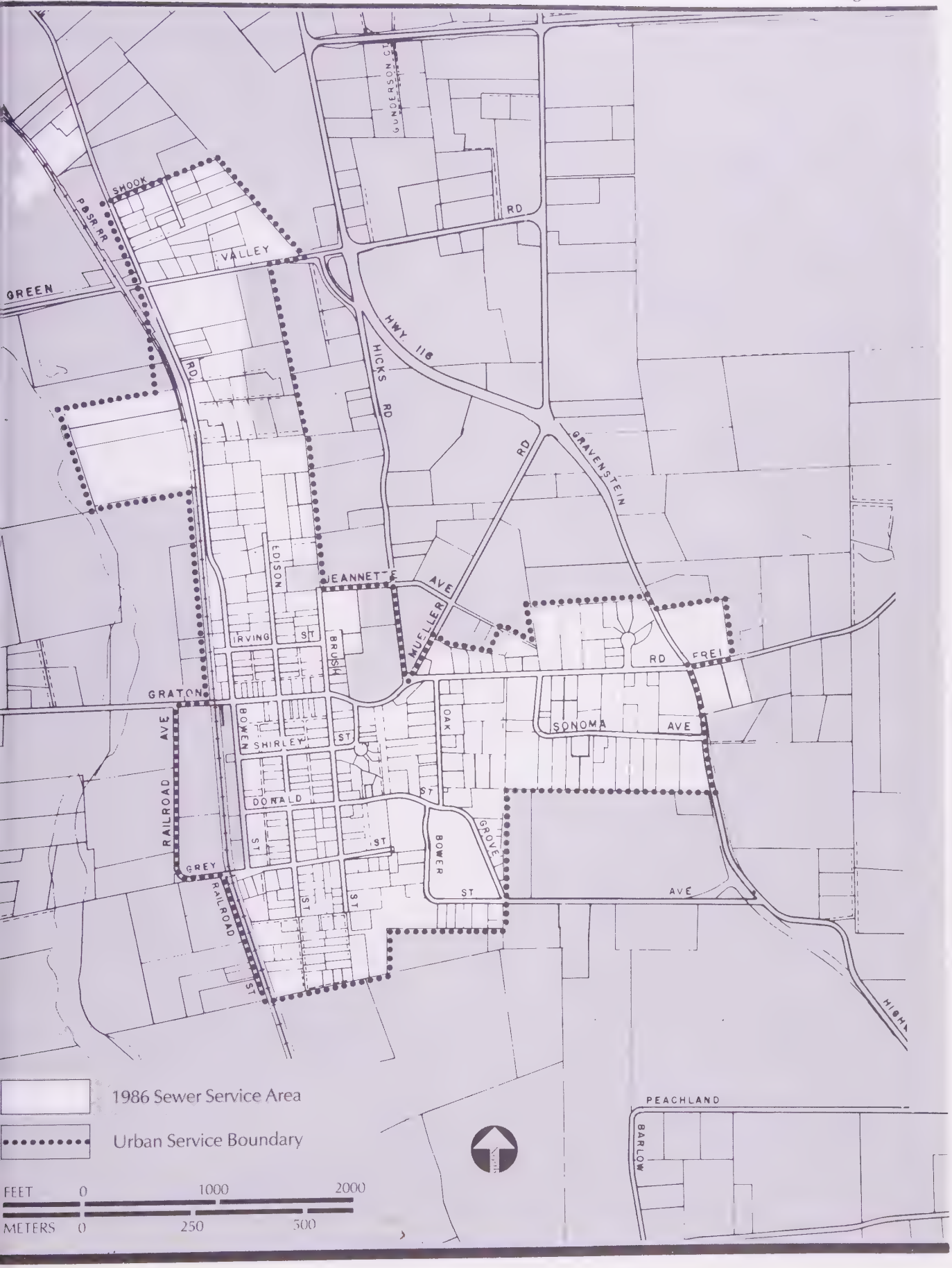
2) the project is designed and sized to serve development at the densities or intensities depicted on the land-use plan map;

COUNTY SERVICE AREA 31 (LARKFIELD, WIKIUP, AIRPORT)

Figure PF-1h

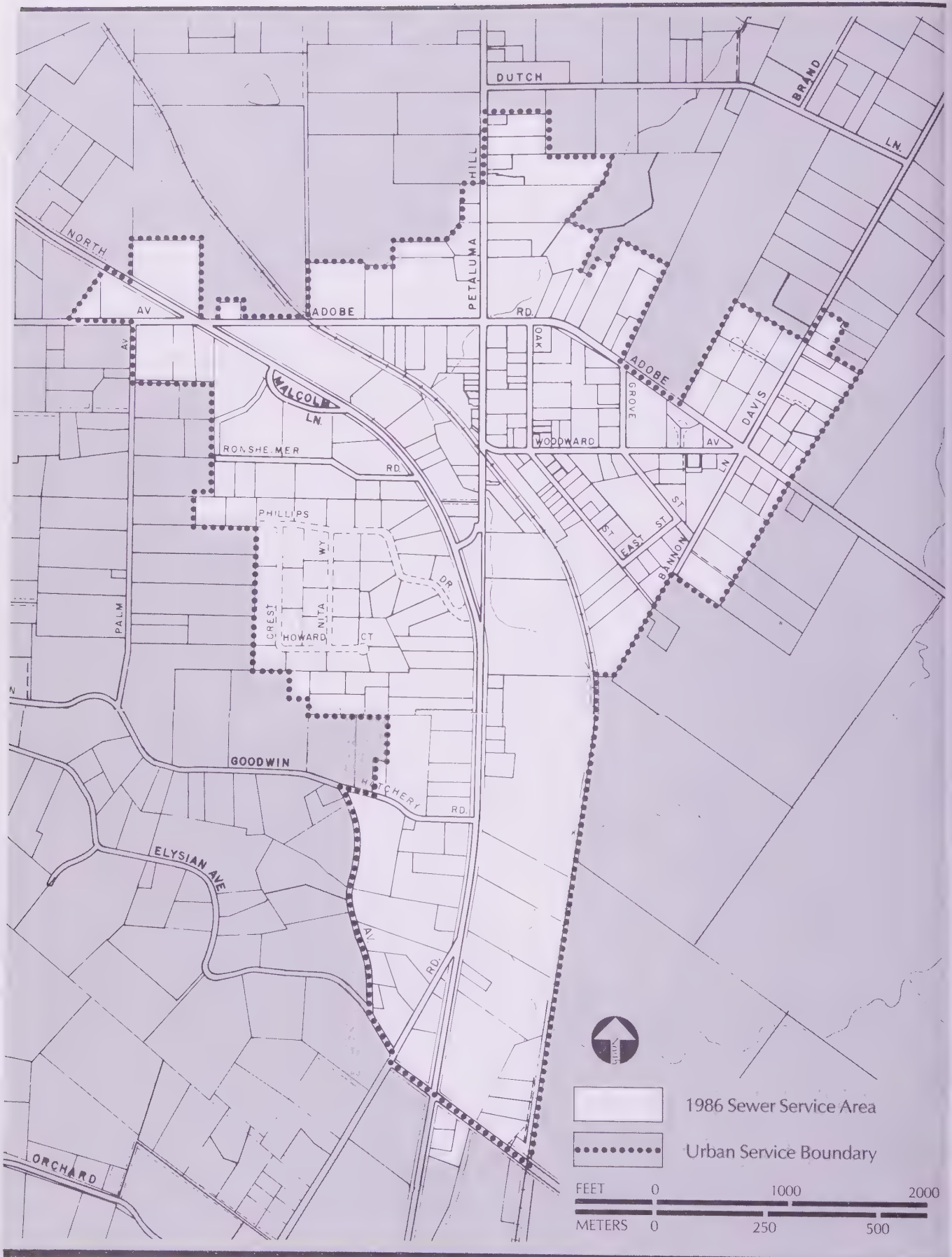


SOUTH PARK SANITATION DISTRICT

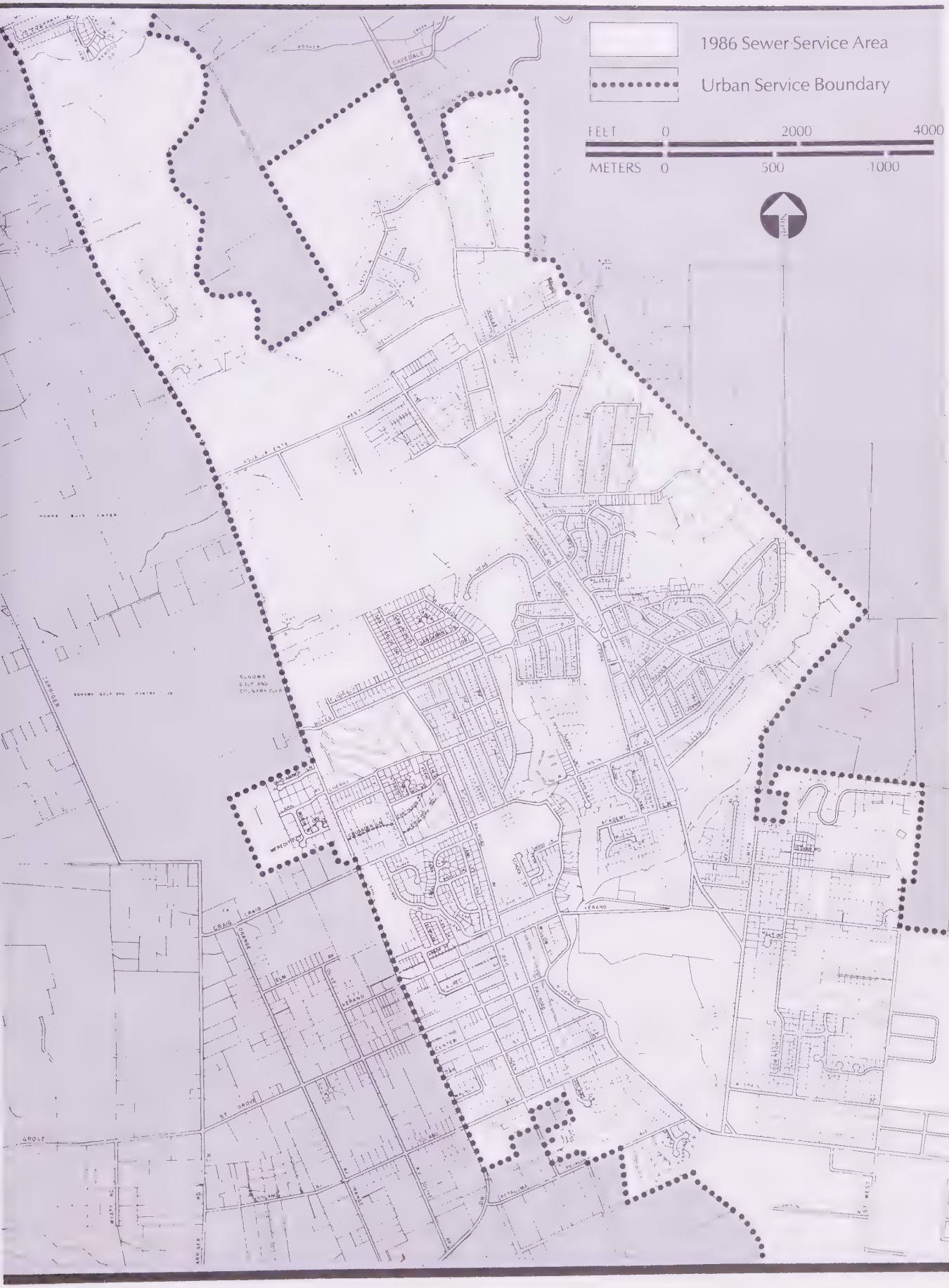


COUNTY SERVICE AREA 2 (GRATON)

Figure PF-1j

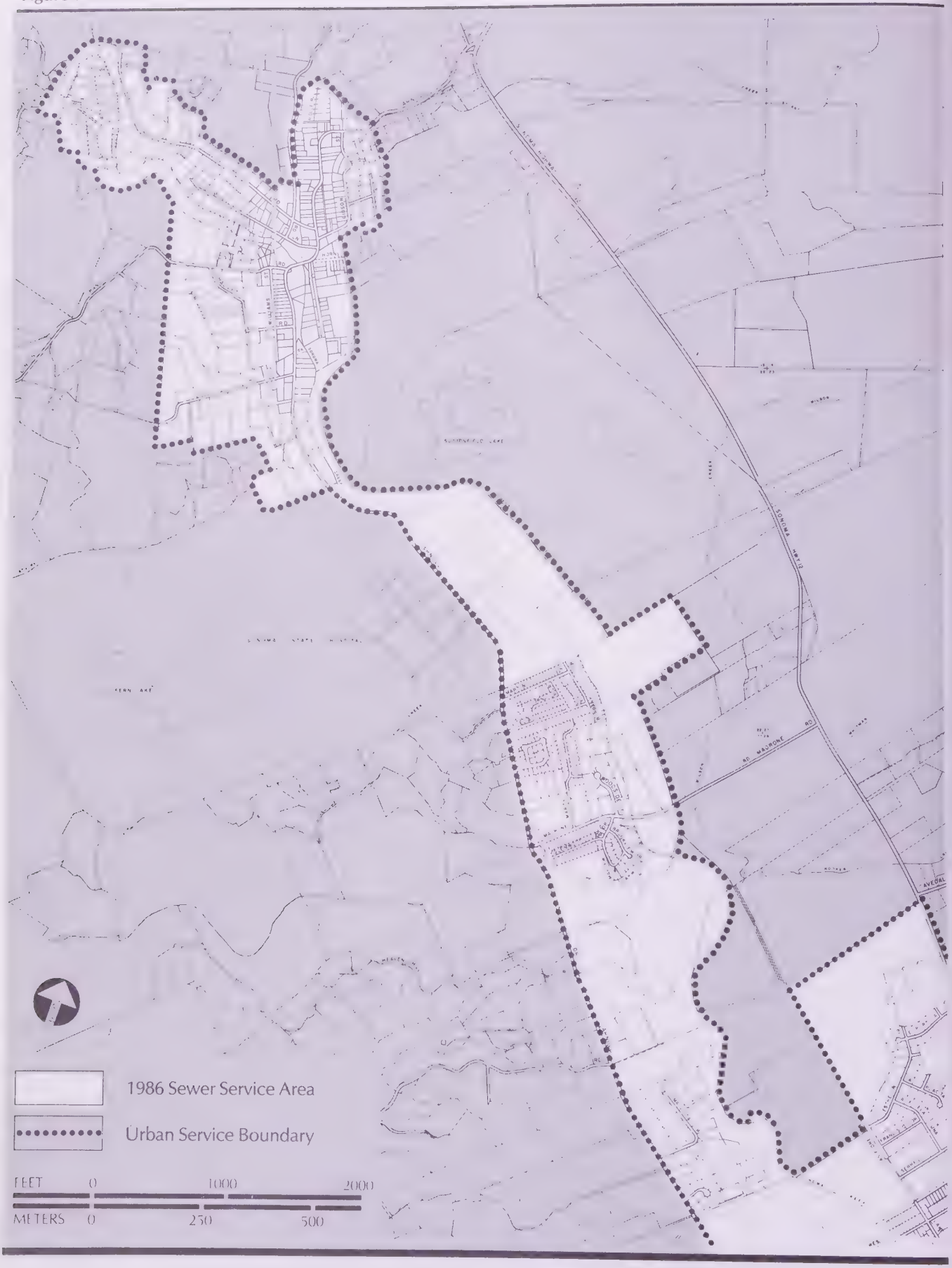


COUNTY SERVICE AREA 19 (PENNGROVE)



SONOMA VALLEY SANITATION DISTRICT (BOYES SPRINGS)

Figure PF-1l



SONOMA VALLEY SANITATION DISTRICT (ELDRIDGE, GLEN ELLEN)

3) the project will not induce population growth beyond that projected for the affected planning area in the land-use element; and

4) the project substantially complies with other applicable general plan goals, objectives and policies.

PF-21: The County shall monitor and -- to the extent permitted by law -- participate in the planning of wastewater management facilities which provide service or discharge treated effluent in unincorporated areas.

PF-2m: Wastewater treatment and disposal options that provide for on reclamation and reuse of wastewater shall be preferred over systems that do not allow reclamation.

PF-2n: Connection of existing or proposed commercial and industrial uses to a sewer system shall consider the potential need for pre-treatment of commercial and industrial wastewaters prior to their entering the domestic collection system.

4.0 PARK AND RECREATION SERVICES

4.1 INTRODUCTION

Preservation of lands for outdoor recreation assists in the conservation of the county's unique natural scenic and cultural resources, contributes to overall economic welfare by encouraging tourism, and enhances the quality of life for county residents and visitors. This section of the Public Facicities and Services Element addresses planning issues related to parks and other recreation facilities owned and operated by public entities.

Parkland Definitions and Standards: The following definitions are utilized by this element for the various types of parklands found in Sonoma County; the standards reflect the recommendations of the National Recreation and Parks Association (NRPA):

Federal Recreation Areas and State Parks - provide the broad range of recreation opportunities described for regional parks (below), but are intended to serve national or statewide populations. Usage data permit a breakdown of the roles performed by federal and state facilities in Sonoma County; the division of use between county residents and non-residents is reflected in Table PF-6. No standard is applicable.

Regional Parks - are intended to provide a broad range of active and passive recreational opportunities, which may include swimming, hiking, camping, boating, fishing, bicycling or group sports. These facilities should generally be within a 30 - 60 minute drive from urban areas; The standard is 20 acres per 1,000 persons.

Community Parks - are intended to be large enough (15 - 20 acres) to accommodate a variety of features such as athletic fields, restrooms, picnic areas and parking and are located reasonably close to population centers. The standard is 2.5 acres per 1,000 persons.

Neighborhood Parks - are intended to generally consist of three to five acres with an open turf multi-use area, picnic areas and a small playground. The standard is 2.5 acres per 1,000 persons. Locations should generally be within one-half mile of the population served.

4.2 FACILITIES AND SERVICES: 1986

Park and recreation facilities in Sonoma County include those maintained by federal, state, county and city governments and by local independent park and recreation districts. Existing and proposed parks are mapped on the land-use and open space maps for the nine regions. Table PF-5 identifies existing and proposed park sites; information on existing facilities is summarized in the following paragraphs.

Federal Recreation Areas and State Parks. The federal government provides two recreational facilities in the county. The 17,615-acre Lake Sonoma area was purchased by the Corps of Engineers to provide protection for environmentally sensitive areas and to create recreational opportunities such as boating and camping. The 2,300-acre Pine Mountain Recreation Area, located in the northeastern county, is owned by the Bureau of Land Management but was not accessible to the public as of 1986. State park lands total 29,759 acres and include small historic parks in the Sonoma Valley and Petaluma; a series of parks along the Sonoma Coast from Salt Point to Bodega Bay which encompass 15,000 acres and include beaches, campsites, and wildflower preserves; 5000 acres in the Guerneville area created to protect redwood groves and provide camping and hiking opportunities; and another 7200 acres used for camping, hiking, and equestrian trails adjacent to Santa Rosa and the Sonoma Valley.

Regional Parks. In 1967, the Sonoma County Board of Supervisors established a regional park system to meet the county's need for recreational opportunities. Since that time, approximately 2800 acres of parkland have been acquired. In 1986 the County owned and operated about 2,894 acres of parks for a ratio of parkland to population of 9.7 acres per 1,000 persons, which is below the recommended NRPA standard of 20 acres per 1,000 population. However, approximately 8,440 acres of park lands in Sugarloaf, Annadel, Jack London, and the Sonoma Coast State Parks also served regional recreational needs and, if included, would result in a ratio of 37.8 acres per 1,000 persons as of 1986. The county also owned the Bouverie Wildflower Preserve, a 22-acre parcel near Glen Ellen.

TABLE PF-5
Existing and Proposed Park Facilities, by Planning Region and Ownership

Region/Ownership	Existing Parks			Proposed Parks		
	Name	Type[1]	Acreage	Name	Type[1]	Acreage
Sonoma Coast/Gualala B						
Federal/State	Fort Ross	S	1,563	Willow Creek Expansion	S	450
	Kruse Reserve	S	317			
	Salt Point	S	5,970			
	Sonoma Coast	S	5,000			
	Willow Creek	S	2,250			
County	Gualala Point	R	150	Gualala Pt. Expansion	R	45
	Stilwater Cove	R	58	Stillwater Cove Expansion	R	150
	Westside Park	R	25	Salmon Creek Preserve	R	100
	Doran Park	R	120	Cedars Preserve	R	1,000
	Watson School	R	1			
	Spud Point Marina	R	--			
Local	Camp Meeker	C	5			
	Occidental	C	2			
Cloverdale/N.E. County						
Federal/State	Lake Sonoma	F	17,615			
	Pine Mountain	F	2,300			
	Robert Louis Stevenson	S	1,588			
County				Cloverdale Regional Park	R/C	300
Local	City of Cloverdale	C/N	7.5	City of Cloverdale	C/N	34.5
Healdsburg and Environs						
County	Healdsburg Beach	C	11	Healdsburg Beach Expansion	C	10
	Keiser Park	C	20	Central Russian River	R	10
				Wayside Park	R	15
				Russian River Regional Pk.	R	60
				Ohlson Ranch	C/R	120
				Shiloh Road	C	15
				Starr Road	N	4.6
				Conde School	N	1.75
				Brooks Rd/Arata Lane	N	5
				Lakewood Drive	N	5
				Pleasant Avenue	N	5
				Hembree	N	5
				Starr Rd/Old Redwood Hwy	N	3
Local	City of Healdsburg	C/N	35.45	City of Healdsburg	C/N	36.55
	Fitch Mountain	C	3			
Russian River						
Federal/State	Austin Creek	S	4,308			
	Armstrong Redwoods	S	680			
County				Lower Russian River	R	300
Local	Camp Meeker	C	5			
	Del Rio Woods	C	7			
	Monte Rio	C	25			
	Russian River	C	2			
	Forestville	C	7.5			

Source: Sonoma County Planning and Regional Parks Departments, 1986
Notes: 1) F - Federal; S - State; R - Regional; C - Community; N - Neighborhood

(Continued)

TABLE PF-5
Existing and Proposed Park Facilities, by Planning Region and Ownership

Region/Ownership	Existing Parks Name	Type[1]	Acreage	Proposed Parks Name	Type[1]	Acreage
Santa Rosa and Environs						
State	Annadel	S/R	4,878	Petrified Forest	S	400
	Sugar Loaf	S/R	2,308	Sugar Loaf Expansion	S/R	750
County	Spring Lake	C/R	314	Taylor Mountain	C/R	550
	Hood Mountain	R	1,450	Shiloh Ranch	R	850
	Roseland	C	20	Roseland Expansion	C	20
				Matanzas Lake	R	350
				Laguna de Santa Rosa	R	350
				Mark West Creek	R	500
				Larkfield Community	C	10
				Dutton Avenue	N	3
				South Wright	N	5
				Stony Point Road	N	5
				Petaluma Hill Road	N	5
				Occidental Road	N	5
Local	City of Santa Rosa	C/N	371	City of Santa Rosa	C/N	329
Sebastopol and Environs						
County	Ragle Ranch	C/R	163	Ragle Ranch Expansion	R	35
Local	City of Sebastopol	C	15	City of Sebastopol	C	12
	Graton	C	2.5			
Rohnert Park/Cotati and Environs						
County	Crane Creek	C/R	128	Crane Creek Expansion	R	100
Local	City of Rohnert Park	C/N	60	City of Rohnert Park	C/N	71
	City of Cotati	C/N	21			
	Penngrove	C	5.5			
Petaluma and Environs						
State	Petaluma Adobe	S	42			
County	Helen Putnam	C/R	171	Helen Putnam Expansion	C/R	80
				Merced Hills	R	350
				So. Sonoma Mountain	R	200
				Stuarts Creek	R	---
				Copeland Creek	R	150
Local	City of Petaluma	C/N	99	City of Petaluma	C/N	10
	Bloomfield	C	3			
Sonoma Valley						
State	Sonoma Historic	S	62			
	Jack London	S/R	795			
County	Sonoma Valley	C/R	162	Sonoma Valley Expansion	R	100
	Maxwell Farms	C/R	85	Coopers Grove	R	100
	Hudeman Slough	R	5			
	Bouverie Wildflower Pres.	R	22			
	Kenwood Community	C/N	5			
	Arnold Field	C	4.9			
Local	City of Sonoma	C/N	29.6	City of Sonoma	C/N	7
	Valley of the Moon P+RD	C	18			
Countywide Totals						
Unincorporated Areas						
Federal			19,915			19,915
State			29,761			31,361
County			2,914.9			8837.3
Local			85.5			85.5
Subtotal			52,676.4			60,208.8
Incorporated Cities			631.6			1,135.6
Grand Total			53,308			61,344.4

Source: Sonoma County Planning and Regional Parks Departments, 1986
Notes: 1) F - Federal; S - State; R - Regional; C - Community; N - Neighborhood

DN:TBLPF.5

Community and Neighborhood Parks. Approximately half the county's population lived in unincorporated areas as of 1980, where five recreation and park districts had been established to meet local recreation needs. Local park needs have been partially addressed by the County's policy of locating regional parks close to urban areas and including facilities designed to serve multiple purposes. Portions of these sites have been developed with playing fields, restrooms, and picnic areas and function as community parks. Smaller sites within unincorporated urban areas have also been designed and developed as community parks. When the dual use of many regional facilities is taken into account, the unincorporated portion of the county had a ratio of about 4.3 acres of community and neighborhood parkland per 1,000 residents as of 1986. On a countywide basis, cities fell short of the recommended parkland standards with 3.8 acres per 1000 residents compared to the standard of 5.0 acres. State and County parks and school sites partially compensated for the shortfall.

4.3 SERVICE DEMANDS AND FACILITY NEEDS: 1986-2005

An analysis of needs for additional parklands in each of the nine planning regions is presented in Table PF-5. Potential future state acquisitions include additions to Willow Creek and Fort Ross state parks in the Sonoma Coast/Gualala Basin region and the acquisition of the Petrified Forest in the Santa Rosa region. Proposed additions to the county regional park system total 3,675 acres, which would result in a regional parklands ratio of about 14.1 acres per 1,000 population in 2005. If existing and proposed state parklands which serve regional needs are included, the ratio would be about 29.8 acres per 1,000 population. This figure exceeds the NRPA standard, but represents a reduction from the 36.2 acres per 1,000 existing in 1986. The County is also considering development of at least 296 acres for community and neighborhood parks, which would result in a ratio of 5.9 acres per 1,000 population in unincorporated areas by year 2005.

Acquisition, development and maintenance of park facilities over the 1986-2005 period is likely to be influenced by the following factors:

1) a lack of federal funding for acquisition and development of parklands;

2) limited state funding which will be oriented towards development and maintenance of existing facilities; and

3) reduced availability of County general fund monies for parkland acquistion, and increased reliance on development fees and user fees and other sources of financing.

It is anticipated that acquisition and development of lands for community parks will become increasingly important as the urban population grows in unincorporated areas. As of 1986, development costs for community parks ranged from $15-25,000 per acre, and yearly operation and maintenance costs ranged from $2-3,000 per acre.

Issues: Since federal and state parks are developed to serve statewide or national needs, the extent to which they should be counted towards addressing the recreational needs of county residents is unclear. The data presented in Table PF-6, which shows the amounts of additional parklands needed to conform to recommended standards, assume that some state parklands serve regional needs and that some regional parks also serve community and/or neighborhood needs. Issues include: 1) determination of the appropriate geographic distribution of new regional, community and neighborhood park facilities in unincorporated areas; 2) the extent to which the County and its agencies should provide local-serving parks in unincorporated urban areas; 3) determination of the appropriate governmental and/or administrative entities to provide local park services; and 4) the means of financing acquisition and development of parklands, and the distribution of the cost burden between existing residents and new development.

4.4 GOALS, OBJECTIVES AND POLICIES

Goal PF-3: It is a goal of the County to encourage the provision of an adequate supply of local and regional parks and quality recreational services to all Sonoma County residents.

Objective PF-3.1: It is the County's objective to provide an adequate supply and equitable geographic distribution of regional- and local-serving parks and recreation services, based on the projected distribution of the county's population as expressed in the Land-use Element.

Objective PF-3.2: It is the County's objective to use the park and recreation and open space standards recommended by the National Recreation and Park Association (NRPA) as minimum standards for establishing needs for additional parklands.

The county shall utilize the following policies related to public parks and recreation facilities:

General Policies

PF-3a: The following parkland standards shall be employed by the County and its agencies: Local and community parks - 5.0 acres per 1000 residents of the unincorporated portion of the county; Regional parks - 20 acres per 1000 residents. A portion of state parklands may be included to meet the standard for regional parks.

TABLE PF-6

Parkland Needs in Unincorporated Areas, by Function, 1986 and 2005

	1986		2005	
	Existing Park Acreage By Function	Additional Park Acreage Needed[1]	Park Acreage By Function	Additional Park Acreage Needed[1]
Sonoma Coast-Gualala [2]				
State/Federal	12,600	---	13,050	---
Regional	2,854	108	3,049	170
Community & Neighborhood	7	27	7	42.5
Preserve	---	---	1,100	---
Cloverdale & Environs				
State/Federal	21,503	---	21,503	---
Regional	---	180	270	276
Community & Neighborhood	7.5	25	72	30
Healdsburg & Environs				
Regional	---	390	175	910
Community & Neighborhood	69.45	60	180.35	154
Russian River				
State/Federal	4,988	---	4,988	---
Regional	---	260	300	316
Community & Neighborhood[3]	46.5	65	46.5	79
Santa Rosa & Environs [4]				
State/Federal	1,642[4]	---	3,142[5]	---
Regional	7,182	2,460	8,482[5]	3,800
Community & Neighborhood	517	200	1,009[6]	125
Sebastopol & Environs [7]				
Regional	82[7]	474	117	568
Community & Neighborhood	98.5[7]	90	110.5	92
R.P./Cotati & Environs				
Regional	77	644	177	1,110
Community & Neighborhood	137.5	29	208.5	33
Petaluma & Environs				
State/Federal	42	---	42	---
Regional	103[8]	890	851	1,390
Community & Neighborhood	170[8]	53.5	216	54
Sonoma Valley [10]				
State/Federal	459.5	---	460	---
Regional	574.5	590	652.5	750
Comm. & Neighborhood	147.5[11]	117.5	154.5	129
Preserve	22	---	122	---

(Continued)

TABLE PF-6: Projected Needs for Additional Park Lands, by Function, Year 2005
(Continued Page 2)

	1986		2005	
	Existing Park Acreage By Function	Additional Park Acreage Needed[1]	Park Acreage By Function	Additional Park Acreag Needed[1]
Countywide Totals				
Unincorporated Areas				
State/Federal	41,234.5	---	43.184.5	---
Regional	10,872.5	6,000	16,155.5	9,290
Community & Neighborhood	569.4	667	1,994.4	735
Total	52,676.4	6,667	60,195.8	10,025
Incorporated Cities [11]	631.6	830	1,135.6	1,587.5
Grand Total	**53,308**	**7,497**	**61,334.4**	**11,612.5**

Notes:

1. Need based on NRPA standards: 20 acres per 1,000 population for regional parks; 5 acres per 1,000 population for community and neighborhood parks. Needs for regional parks based on total 1980 population of each planning area; needs for community and neighborhood parks based on 1980 population of the unincorporated portions of each planning area.
2. Assumes 5000-acre Sonoma Coast State Park functions at a 50/50 State/Regional split.
3. Includes Recreation Districts
4. Assumes 4878-acre of Annadel State Park functions at a 10/90 State/Regional split; 2308-acre Sugar Loaf State Park functions at a 50/50 State/Regional split; 314-acr Spring Lake Park functions at a 60/40 Regional/Community split.
5. Assumes 1450-acre Hood Mtn. State Park shifts to 50/50 State/Regional split.
6. Assumes 43 acres of existing and proposed parks in South Santa Rosa are annexed.
7. Assumes 163-acre Ragle Ranch Regional Park functions at a 50/50 Regional/Community split.
8. Assumes 171-acre Helen Putnam Regional Park functions at a 60/40 Regional/Communit split.
9. Assumes Crane Creek Regional Park functions at 60/40 Regional/Community split.
10. Assumes 795-acre Jack London State Park functions at a 50/50 State/Regional split; Includes Valley of the Moon Recreation District.
11. Assumes Sonoma Valley Regional Park functions at a 20/40 Regional/Community split; assumes Maxwell Farms Regional Park functions at a 62/38 Regional/Community split.
12. Cities data included for informational purposes only.

DN:TBLPF.6

PF-3b: The Land-use Element shall designate existing and planned parks owned by federal, state, county or local agencies; locations proposed for future parks shall be schematic, and may be located on any suitable lands in the general vicinity.

PF-3c: Parklands and trails shall be designated on the open space plan maps.

Policies Related to Regional Parks

PF-3d: The primary emphasis of the County's regional parks program shall be to acquire, improve, operate and maintain recreation and park areas that serve a countywide purpose.

PF-3e: In urban unincorporated areas where significant need is demonstrated and there is no local park and recreation district, community- and/or neighborhood-serving recreation facilities may be provided in regional parks. The intent shall be that such facilities would be provided by the County only until the urban area incorporates, is annexed by an adjacent city, or an alternative administrative entity is established.

PF-3f: The 5-year Capital Improvements Program shall be used as the means of coordinating the acquistion, improvement and maintenance of regional park facilities.

PF-3g: A countywide development fee ordinance adopted pursuant to the Quimby Act shall be applicable to specified discretionary planning permits as follows:

(a) dedication of land for parks and/or in-lieu fees shall be required as a condition of approval for all subdivisions of 51 or more lots; and
(b) payment of in-lieu park acquisition and development fees shall be required as a condition of approval for all subdivisions of 50 or fewer lots.

PF-3h: In those areas encompassed by specific plans, separate ordinances establishing requirements for reservation or dedication of lands for parks and/or fees in lieu of dedication may be adopted. The requirements expressed by such ordinances shall be imposed as conditions of approval of discretionary planning and development permits, including but not limited to tentative maps, use permits and design review. In the event such an ordinance is adopted for a specific plan, the countywide ordinance shall not be applicable to the subject land area.

PF-3i: Parklands, open space easements, scenic easements, and public access easements may be acquired by County and its agencies by negotiations, gifts and through conditions placed on approvals of discretionary development permits.

PF-3j: The County may establish a land acquisition reserve fund to purchase areas of high park, recreation, or scenic potential in parts of the county now lacking adequate park facilities. Areas to be considered for acquisition may include lands with outstanding natural features; areas capable of providing recreational activities such as camping, picnicing, swimming, boating, fishing, hiking; and historic areas.

PF-3k: Use shall be made, to the maximum extent possible, of any federal and/or state park, facility, and open space assistance grants that are available. It is recognized that many grant programs are on a matching fund basis and that many are awarded after a competitive selection process.

PF-3l: User fees may be established in selected County park areas where special facilities are available and where collection of such a fee is practical. The fee structure shall continue to offer discounts to county residents.

Policies Related to Community and Neighborhood Parks

PF-3m: The various cities within Sonoma County shall be encouraged provide local-serving parks and recreation services for their residents; the County's regional parks program is not likely to have the financial resources to meet needs by city residents for these recreation services.

PF-3n: The Regional Parks Department shall consult and coordinate with cities and local special districts in the site selection and program development process for parks and open space areas, and may provide technical assistance and advice on local park and recreation programs.

PF-3o: Where a county-wide recreation need is demonstrated in an area adjacent to a city or special district which provides park services, cooperative park development programs shall be encouraged on a cost-sharing basis. Joint powers agreements between local and county agencies may be developed to provide for the acquisition and/or development and operation of parks in this context.

PF-3p: The formation of county service areas (CSAs) or other appropriate special districts shall be encouraged in those unincorporated urban areas where there is a need for local-serving park and recreation services; such entities should be formed only if a means of financing the on-going operations and maintenance costs is clearly established.

5.0 PUBLIC EDUCATION SERVICES

5.1 INTRODUCTION

The long-standing commitment to provide quality public education services requires close cooperation between local governments which formulate and administer land-use and development policies and school districts responsible for providing education services. The intent of this section of the Public Facilities and Services Element is to establish policies which will integrate the County of Sonoma's land-use policies with planning for public education facilities, in a manner which may assist individual school districts in their detailed facility planning.

5.2 FACILITIES AND SERVICES: 1986

Sonoma County encompasses 41 separate school districts whose attendance areas are wholly contained within the county, and four districts whose school facilities are located outside the county but which provide services to county residents. Of the 41 districts in the county, 33 are elementary school districts, four are high school districts and four are unified districts serving grades K-12. Figures PF-2a through PF-2i show the boundaries of the various school districts within each of the nine planning regions. Each district has its own independent revenue base, elected board and administration. One of the consequences of this decentralization is the lack of comprehensive planning for school facilities and other school-related needs, although the Sonoma County Office of Education provides administrative and business services (in varying degrees) to all districts. Existing school facilities and undeveloped, district-owned sites are designated on the landuse plan maps.

A 1986 school facilities survey conducted by the Sonoma County Planning Department elicited responses from 32 districts. Responding districts operated a total of 93 of the county's 120 schools and served a total of 50,760 students, about 90 percent of total enrolled students. Over three-fifths of all schools were operating at or near capacity. The 30 districts reporting data on number of classrooms maintained a total of 1,548 classrooms and averaged 26.6 students per classroom.

Table PF-7

Public School Attendance Projections by Planning Region

Planning Region	1985[1] Total Population	1985[1] Attendance[3] K-6	1985[1] Attendance[3] 7-12	1990 Total Population	1990 Attendance K-6	1990 Attendance 7-12	2005 Total Population	2005 Attendance K-6	2005 Attendance 7-12
Sonoma Coast/Gualala Basin[2]	5,210	567	398	5,400	585	415	6,300	685	480
Cloverdale/N. E. County	9,700	925	624	10,500	1,000	670	13,800	1,320	890
Healdsburg and Environs	22,800	1,931	1,625	26,200	2,220	1,870	45,500	3,850	3,230
Russian River	13,750	1,111	955	14,120	1,140	980	15,000	1,280	1,100
Santa Rosa and Environs	137,500	10,873	9,205	151,200	11,940	10,120	190,000	15,010	12,710
Sebastopol and Environs	24,800	2,324	1,853	25,160	2,360	1,880	28,400	2,660	2,120
Rohnert Park and Environs	37,000	3,453	2,413	42,100	3,930	2,740	55,500	5,180	3,620
Petaluma and Environs	48,740	4,385	3,993	54,350	4,890	4,450	69,500	6,250	5,690
Sonoma Valley	31,750	2,366	1,760	32,890	2,450	1,820	37,500	2,790	2,080
Sonoma County	331,250	27,935	22,826	361,920	30,515	24,945	462,300	39,025	31,920

(1) Total population estimated by Sonoma County Planning Department. School attendance taken from attendance for each school district for September, 1985, from the Superintendent of Schools office.
(2) The Coastal planning area population subtracts the Bodega Bay area population because it is in the Shoreline Unified School District, a Marin County District.
(3) Attendance by planning area is an approximation based on school district boundaries. The geographic correspondence between school districts and planning areas is close but not exact.

Source: Sonoma County Planning Department, 1986

DN:TBLPF.7

5.3 SERVICE DEMANDS AND FACILITY NEEDS: 1986-2005

Service Demands: As the county's population increases, the number of school-age children also grows. During the 1970's the trend toward postponement of child-bearing resulted in slower-than-expected expansion of the school-age population, even though the largest percentage of growth was in the 20-34 age range, prime child-bearing years. This trend has moderated somewhat and school districts have experienced general increases in enrollments during the 1980's. Generally, the future rates of growth in school age population are likely to resemble the rates of population growth in the various sub-regions of the county. Projections of the number of pupils expected to attend public schools are shown in Table P-7 for the nine regions.

The projected increases in public school enrollments from 1985 to 1995 and from 1985 to 2005 are presented in Table PF-7. These projections are based on the overall population forecasted for each region in the Land-use Element and assume that the proportion of school-age children attending private schools or being home-educated will remain stable over the 1985-2005 period. The projections should be regarded as approximations rather than as precise estimates, but are useful as a general guide for anticipating public school attendance and facility needs.

Table PF-8
Projected Increases in Public School Attendance by Planning Region

Planning Region	1990 Increase in Attendance from 1985 K-6	7-12	Total	2005 Increase in Attendance from 1985 K-6	7-12	Total
Sonoma Coast/ Gualala Basin	20	15	35	120	80	200
Cloverdale & Environs	75	45	120	420	260	680
Healdsburg & Environs	290	240	530	1,920	1,600	3,520
Russian River	30	25	55	170	145	315
Santa Rosa & Env.	1,070	910	1,980	4,140	3,500	7,640
Sebastopol & Environs	40	30	70	340	270	610
RP-Cotati & Environs	480	330	810	1,730	1,210	2,940
Petaluma & Environs	500	460	960	1,860	1,700	3,560
Sonoma Valley	80	60	140	420	320	740
Sonoma County	2,585	2,115	4,700	11,120	9,085	20,205

Source: Sonoma County Planning Department, 1986

Facility Needs. Although the estimation of needs for facilities is a complex task, if an overall average of 20 students/classroom is used as a simplifying assumption, needs for new facilities would total 240 additional classrooms by 1990 and 1,090 by 2005, along with appropriate ancillary facilities such as libraries, auditoriums, gymnasiums and administrative offices. Lands

available to meet these needs include those portions of existing school sites where facilities can be expanded as well as undeveloped sites owned by school districts. Of the 32 districts responding to the school facilities survey, 18 reported some potential for new construction on existing school sites as of 1986; the total estimated potential for construction of new facilities on existing sites was 235 classrooms. However, only six districts reported owning vacant sites for construction of new schools and the amount of land was less than 80 acres.

Planning for future school facilities appropriately occurs on a district-by-district basis, where local needs and resources can be fully evaluated. However, information available as of 1986 indicated that the principal short-term need is likely to be for construction of new classrooms on existing occupied sites, while long-term needs are for additional sites for new schools and related facilities. Survey data indicated that districts in the Sonoma Coast, Cloverdale, Russian River and Sonoma Valley planning regions areas may be able to fully accommodate long-term facility needs by utilizing existing occupied sites, while districts in the Healdsburg, Santa Rosa, Rohnert Park-Cotati and Petaluma planning areas may have to acquire additional sites for new school facilities. In the latter group of planning areas, only the Healdsburg Union, Santa Rosa City, Dunham, Liberty and Waugh districts currently owned vacant sites, and some of these were described as unsuitable for school purposes.

One potential source of financing for school facilities is the imposition of "school impact" fees on new residential construction, as authorized by Sections 65970 et seq. of the California Government Code. Until 1986 fees adopted pursuant to the state statute could only be used for temporary school facilities, although local governments relying on their inherent police powers could adopt additional regulations imposing developer fees for permanent school facilities. As of that date, 13 districts collected impact fees which ranged from $900 to 1267 per single-family dwelling. Although state law now authorizes local school districts to impose development fees to finance permanent facilities, it is likely that the availability of funds for acquisition of new school sites and construction of permanent classroom facilities will continue to be largely dependent on state sources. California law also enables a county to assist school districts in acquiring new school sites by adopting an ordinance requiring subdividers to reserve or dedicate elementary school sites as a condition of subdivision approval.

Existing school facilities and district-owned future school sites are designated on the land-use plan maps for the nine planning regions. When there is a known need for new school sites in an area, general locations may be designated on the land-use maps of any applicable specific plan.

5.4 GOALS, OBJECTIVES AND POLICIES

Issues: A principal issue with regard to planning for public education services is the need for increased coordination between the land-use planning and development review functions of county government and the facilities planning function of individual school districts. Although the projections of school-age population by planning region should provide some assistance in anticipating service demands, they do not easily permit a district to calculate the amount, rate or location of growth likely to occur within its attendance area. To accomplish this, the residential holding capacity of the land-use plan map for each district's attendance area should be computed and would provide the basis for designation of general locations for new school sites on the land-use plan maps as a means of advising property owners and potential subdividers of the possibility that a school site reservation or dedication could be required as a condition of future subdivision approvals.

Goal PF-4: It is a goal of Sonoma County to facilitate the provision of quality public education services throughout the county in a manner responsive to projected growth, the needs of individual school districts and the availability of state funds for public education services.

Objective PF-4.1: It is the County's objective to assist school districts in developing more precise estimates of population growth within their attendance areas.

Objective PF-4.2: It is the County's objective to use estimates by school districts of new school site needs as the basis for applying school site designations on land-use plan maps, thereby ensuring proper consideration of school needs at the earliest possible stage of the development review and approval process.

The County shall employ the following policies related to public education services:

PF-4a: Appropriate agencies of the County shall assist school districts in estimating the amount, rate and location of projected population growth within unincorporated portions of their attendance areas.

PF-4b: Upon receipt of documentation from school districts and when determined to be appropriate by the Board of Supervisors, it is the County's policy to amend the land-use plan map to apply school site designations; such designations may be parcel-specific or non-parcel-specific, and shall include sites needed to accommodate projected growth over a 20-year timeframe. The following criteria shall apply to such designations:

1) For parcel-specific designations, the subject parcel shall:

   (a) comply with any applicable state standards regarding parcel size, location, dimensions and topography.
   (b) be located so as to avoid any unmitigatable adverse effects on the environment, including traffic circulation and noise generation/exposure.
   (c) be owned by a public entity.

2) For non-parcel-specific designations, the designation shall be applied within a general area where documentation provided by a school district demonstrates the need for a new school site; any subsequent selection of a suitable parcel in the general vicinity shall be deemed consistent with this plan.

PF-4c: Upon submission of documentation by a school district that it requires assistance in financing interim facilities or in obtaining sites for new schools, the County may adopt an ordinance requiring the reservation or dedication of land, the payment of fees, or both, as a condition of approval of discretionary permits for development within the affected district.

PF-4d: No building permit shall be issued for any new development located within a school district which has adopted an ordinance pursuant to Government Code Section 65970 et seq. unless and until the applicable school district has certified that the proposed development has complied with all requirements imposed by the district, including any developer fees for temporary or permanent facilities.

PF-4e: In reviewing projects of school districts for consistency with the general plan pursuant to Section 65402 of the California Government Code, findings of consistency may be made only if a site proposed for development of classroom or directly related ancillary facilities, or the general area of such a site, is designated on the land-use plan map pursuant to Policy PF-4b, and the facilities are designed to serve residential development at the densities and locations depicted on the land-use plan map.

PF-4f: It is the County's policy to engage in a cooperative planning effort with school districts and cities in determining needs for school sites within the spheres of influence of cities.

Figure PF-2a

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Sonoma Coast / Gualala Basin Planning Area

PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3 4 5
MILES 0 1 2 3

Cloverdale / N.E. County Planning Area

Healdsburg and Environs Planning Area

Russian River Planning Area

Sebastopol and Environs Planning Area

CLOVERDALE V.F.D.

GEYSERVILLE UNIFIED (A)

ANNAPOLIS V.F.D.

WEST SIDE UNION (H)

HORICON RESERVATION (PA)

SEA RANCH C.S.A.

SEA RANCH V.F.D.

MONTGOMERY (A)

ODIYAN V.F.D.

CAZADERO V.F.D.

FORT ROSS (A)

FORT ROSS RD. V.F.D.

TIMBER COVE C.S.A.

JENNER V.F.D.

MONTE RIO F.D.

CAMP MEEKER OCCIDENTAL V.F.D.

TWIN HILLS F.D.

HARMONY UNION (A)

MONTE RIO UNION (A)

SHORELINE

SHORELINE UNIFIED (MARIN)

BODEGA V.F.D.

VALLEY FORD

BODEGA BAY V.F.D.

P A C I F I C O C E A N

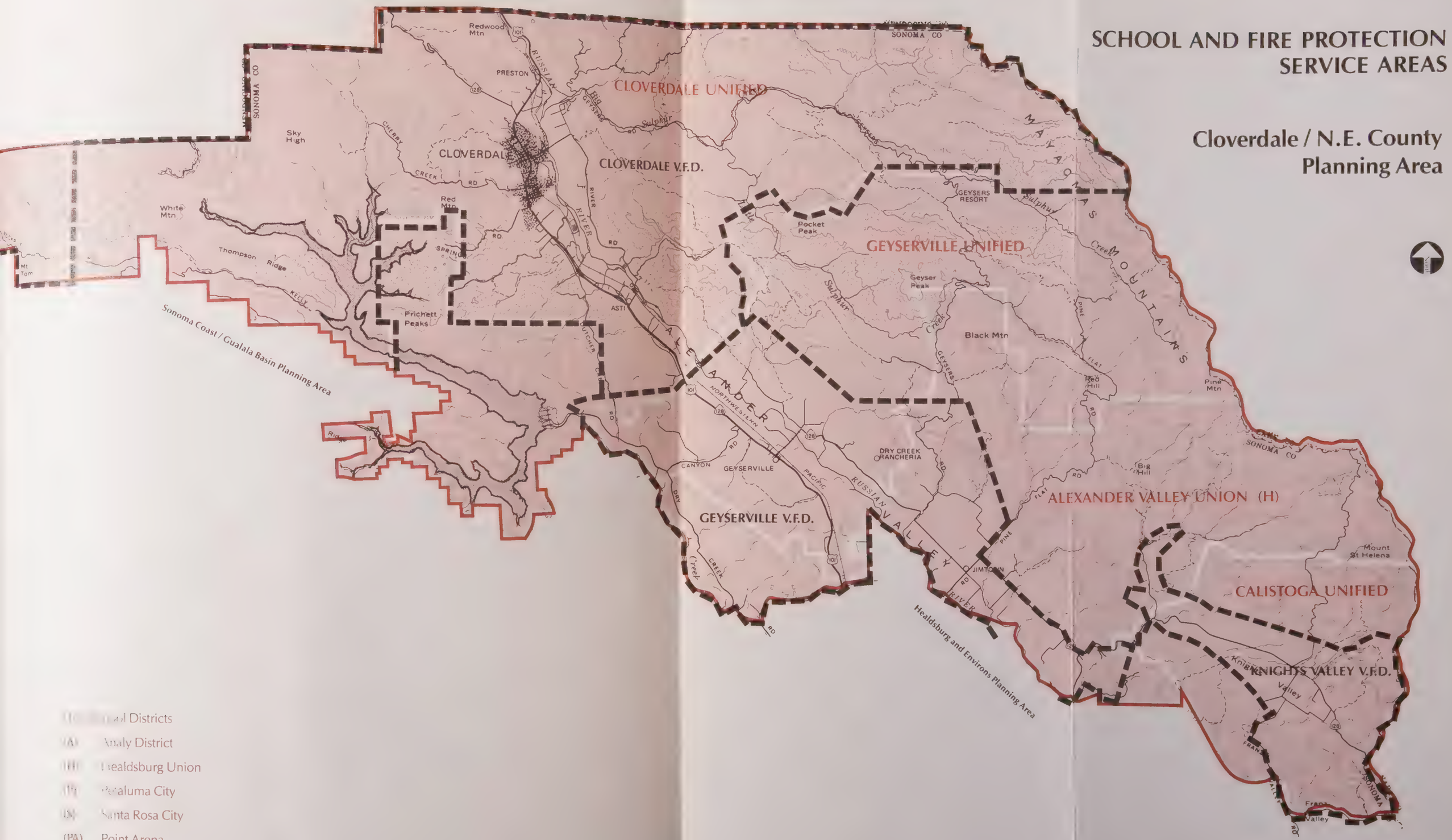
School Districts
(A) Analy District
(H) Healdsburg Union
(P) Petaluma City
(S) Santa Rosa City
(PA) Point Arena

Fire Protection Area Boundary

School District

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Cloverdale / N.E. County Planning Area



(U) School Districts
(A) Analy District
(H) Healdsburg Union
(P) Petaluma City
(S) Santa Rosa City
(PA) Point Arena

PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3 4 5
MILES 0 1 2 3

Figure PF-2c

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Healdsburg and Environs Planning Area

GEYSERVILLE UNIFIED (A)

GEYSERVILLE V.F.D.

HEALDSBURG UNION (H)

RIO LINDO V.F.D.

HEALDSBURG

FITCH MT. C.S.A.

ALEXANDER VALLEY UNION (H)

WINDSOR V.F.D.

WINDSOR UNION (H)

ALPINE V.F.D.

MT. HOME V.F.D.

WEST SIDE UNION (H)

RINCON VALLEY F.D.

WINDSOR

Cloverdale / N.E. County Planning Area

Sonoma Coast / Gualala Basin Planning Area

Russian River Planning Area

Santa Rosa and Environs Planning Area

Bradford Mtn

Big Ridge

Marble Mine Ridge

Queens Peak

Wild Hog Hill

Fitch Mtn

Green Bend

Torse Hill

Mark West Cr

WEST DRY CREEK RD.

DRY CREEK RD.

Dry Creek RD.

RUSSIAN RIVER RD.

ALEXANDER VALLEY RD.

WESTSIDE RD.

EASTSIDE RD.

OLD REDWOOD HWY.

FRANZ VALLEY RD.

CLOVERDALE BLVD.

HILL RD.

NORTH

Districts

- (A) County District
- (H) Healdsburg Union
- (W) Petaluma City
- (R) Santa Rosa City
- (PA) Point Arena

Fire Protection Area Boundary

School District

PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3

MILES 0 1 2

Figure PF-2d

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Russian River Planning Area

PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

Figure PF-2e

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Santa Rosa and Environs Planning Area

School Districts
- (A) Analy District
- (H) Healdsburg Union
- (P) Petaluma City
- (S) Santa Rosa City
- (PA) Point Arena

Fire Protection Area Boundary

School District

PUBLIC FACILITIES ELEMENT

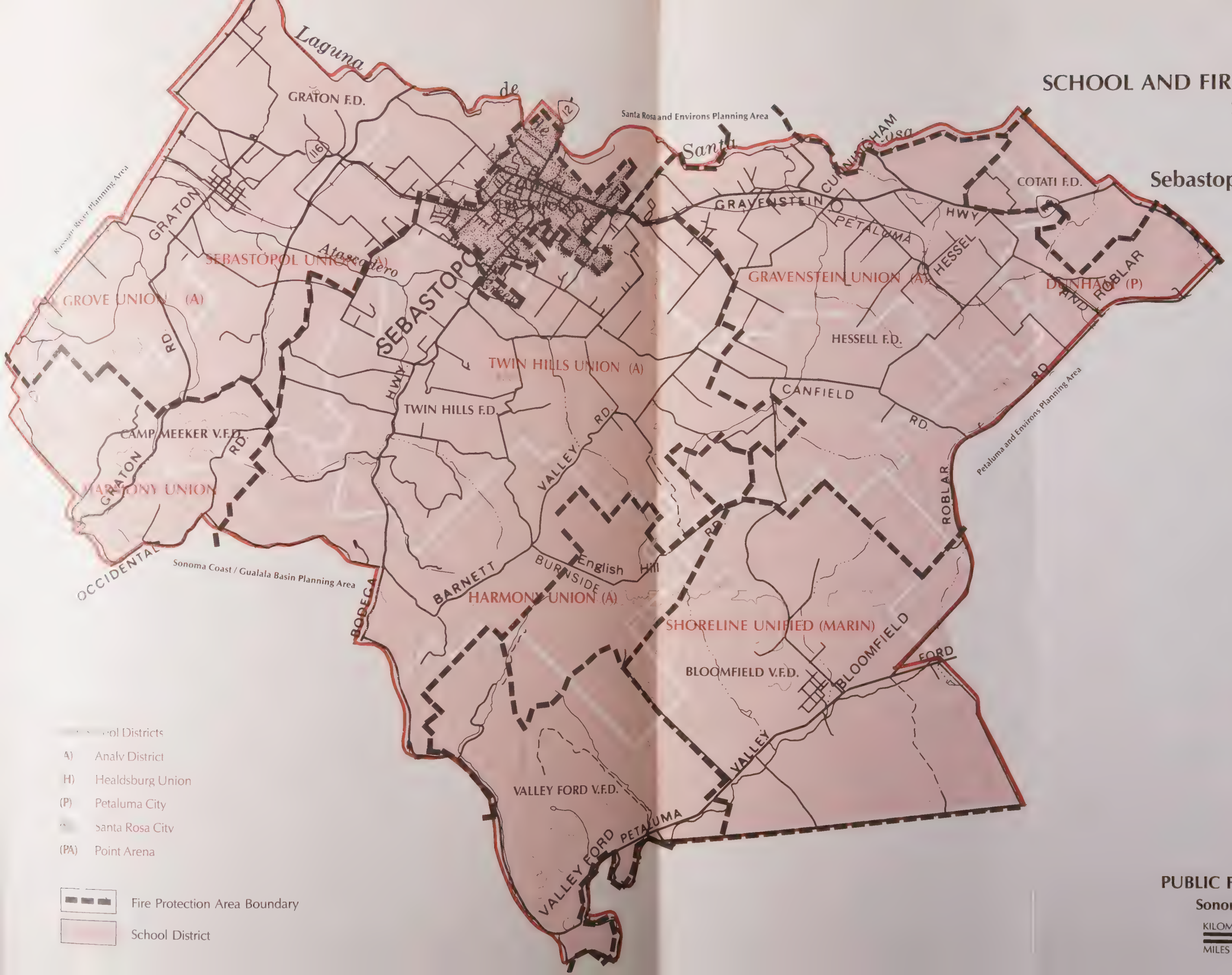
Sonoma County General Plan

KILOMETERS 0 1 2 3

MILES 0 1 2

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Sebastopol and Environs Planning Area



PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2

MILES 0 1

Figure PF-2g

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Rohnert Park – Cotati and Environs Planning Area

Santa Rosa and Environs Planning Area

Sebastopol and Environs Planning Area

Petaluma and Environs Planning Area

Sonoma Valley Planning Area

BELLEVUE UNION (S)

BELLEVUE F.D.

NORTHWEST

ROHNERT PARK DEPT. OF PUBLIC SAFETY (P)

ROHNERT PARK

COTATI F.D.

RD

116

COTATI F.D.

COTATI

HILL

COTATI F.D.

DUNHAM (P)

101

LIBERTY (P)

REDWOOD

116

Meacham Hill

PETALUMA

PENNGROVE

AMH

Matanzas

BENNETT VALLEY F.D.

BENNETT VALLEY UNION

OLD ADOBE UNION (P)

PETALUMA CITY (P)

600

1000

PENNGROVE F.D.

ch School Districts

A) Analy District

(H) Healdsburg Union

P) Petaluma City

S) Santa Rosa City

(PA) Point Arena

Fire Protection Area Boundary

School District

PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

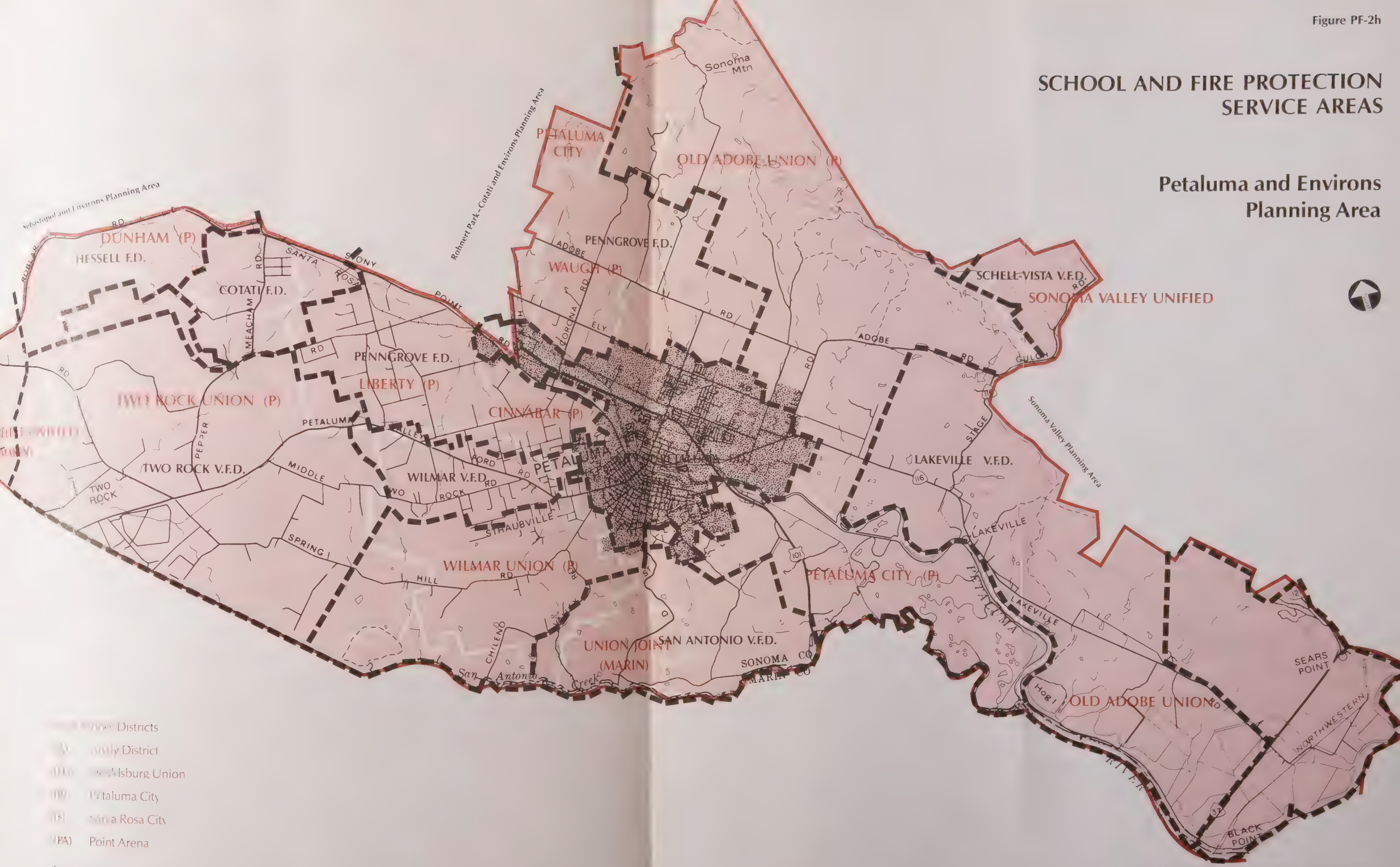
KILOMETERS 0 1

MILES 0 1

Figure PF-2h

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Petaluma and Environs Planning Area



- [illegible] Districts
- [illegible]ly District
- [illegible]ldsburg Union
- [illegible]taluma City
- [illegible]a Rosa City
- (PA) Point Arena

Fire Protection Area Boundary

School District

PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

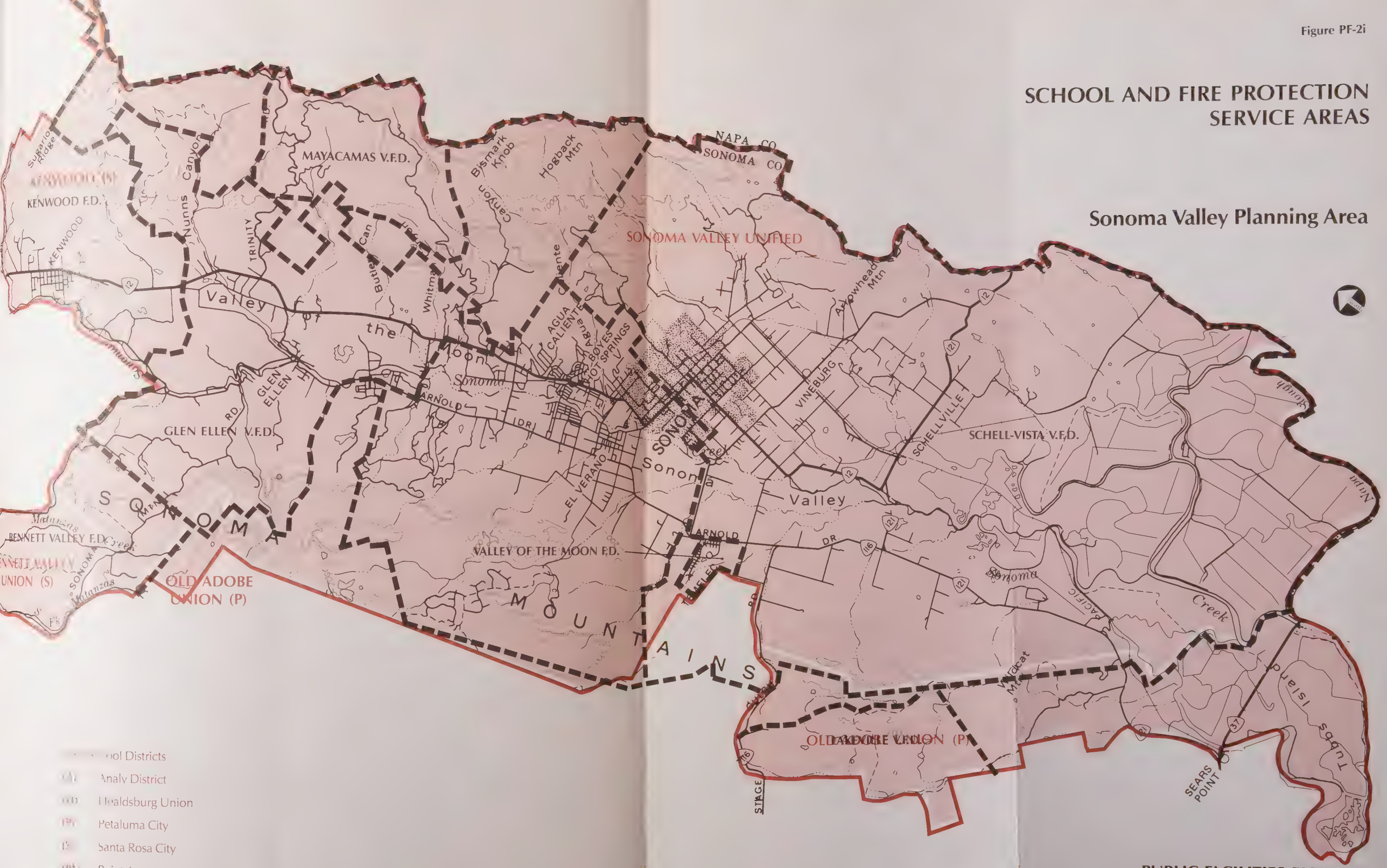
KILOMETERS 0 1 2 3

MILES 0 2 3

Figure PF-2i

SCHOOL AND FIRE PROTECTION SERVICE AREAS

Sonoma Valley Planning Area



School Districts
- (A) Analy District
- (H) Healdsburg Union
- (P) Petaluma City
- (S) Santa Rosa City
- (PA) Point Arena

Fire Protection Area Boundary

School District

PUBLIC FACILITIES ELEMENT

Sonoma County General Plan

KILOMETERS 0 1 2 3

6.0 FIRE PROTECTION SERVICES

6.1 INTRODUCTION

Reliable and cost-effective fire protection services, together with the emergency medical and rescue services provided by fire agency personnel, are essential to the protection of life and property in Sonoma County. This section of the Public Facilities and Services Element expresses general policies for fire suppression and emergency medical services which are provided by for governmental entities and other organizations in unincorporated areas; wildland fire suppression, fire prevention and inspection services are addressed in the Safety Element.

Organization of Fire Service Agencies Fire suppression and emergency medical services in unincorporated portions of the county are provided by the following agencies:

- Fire Protection Districts. Eighteen special districts provide services in unincorporated areas. Revenues are property tax-based; each district has an independent elected board of directors.

- Volunteer Companies. Nineteen volunteer companies have been formed in various rural unincorporated communities to provide local services where none were previously available. Typically organized as autonomous, non-profit organizations, they rely on voluntary contributions for most revenues, although the county has provided some financial support in recent years.

- CSAs/CSDs. Two County service areas (Timer Cove and Sea Ranch) and a community services district (Cazadero) have chosen to provide fire protection services. All three areas rely on volunteer firefighters for primary staffing. However, the Sea Ranch CSA also contracts with CDF for paid personnel to supplement its volunteers.

- California Department of Forestry (CDF). This state agency's primary mission is the suppression of wildland fires within its specified "Area of Responsibility." Under a separate contract, CDF also provides staffing for the Sea Ranch Fire Department.

- Contract Services. The county contracts with the City of Cloverdale for services in a large area of the north county. The County also contracts with various municipal and district fire agencies to provide back-up services to volunteer companies through the integrated response plan.

The primary areas served by the various fire protection agencies and organizations are illustrated by Figures PF-2a through PF-2i for the nine planning regions.

6.2 FACILITIES AND SERVICES: 1986

A "Fire Services Study," prepared in 1983 by Hughes, Heiss and Associates, analyzed all fire suppression services provided in unincorporated areas of the county. A principal finding of the study was that these services were provided by a large and complex array of agencies, with staffing heavily dependent on paid-call, part time and volunteer personnel. Table PF-9 summarizes data on fire protection facilities, equipment, and personnel as of 1986.

Three significant recommendations of the 1983 study had been implemented by the County by 1986:

1) A centralized professional staff had been established to coordinate planning among the 52 agencies providing fire suppression services in the county; a Department of Fire Services was established in July 1985 under the direction of the County Fire Warden.

2) The California Department of Forestry's "Schedule A" contract, under which the CDF provided services to unincorporated areas not served by other agencies, had been phased-out. CDF's responsibilities were assumed by 17 different fire protection agencies which agreed to respond within former "Schedule A" contract areas adjoining their primary service areas in a modified integrated response plan. CDF retained primary responsibility for state-responsibility lands throughout the county, consisting primarily of wildland, timber and watershed lands.

3) A centralized dispatch system for fire and emergency medical responses had been developed and implemented. The system became operational in January 1986, with 34 of the 52 agencies in the county participating.

Other findings of the 1983 study were no longer applicable as of 1986 due to changed conditions.

Availability of Personnel. The study found that the county's fire suppression services were highly dependent on paid-call, part-time and volunteer personnel, and that volunteer participation was not a problem in most areas of the county. Although dependence on non-full-time personnel remains, the total supply of volunteer firefighters and public interest in participation have fallen off sharply in recent years. This can be attributed to increases in time commitment required by increased volumes of calls for service and new training requirements, and to changes in lifestyles and service expectations in many areas as development occurs and is occupied by new residents.

Table PF-9

Fire Protection Services, Personnel and Facilities Summary, 1986

Agencies	Stations: Full Service	Stations: Apparatus Storage	Vehicles: Fire[2] Suppression	Vehicles: Rescue	Vehicles: Misc.	Staff[1]: Paid	Staff[1]: Volunteer[1]
Fire Districts							
Bellevue	1	0	4	1	2	4	20
Bennett Valley	1	0	5	1	0	1	24
Bodega Bay	1	0	4	1	0	0	23
Cazadero	1	1	3	2	0	0	35
Cotati	1	0	4	1	1	2	22
Forestville	1	0	5	1	1	3	28
Glen Ellen	1	2	6	1	1	1	38
Graton	1	0	5	1	1	0	37
Guerneville	1	2	7	3	1	10.5	50
Hessel	1	1	5	1	0	1	25
Kenwood	1	1	4	1	0	0	30
Monte Rio	1	2	5	1	0	0	21
Penngrove	1	2	7	1	1	5	22
Rincon Valley	2	1	13	2	1	13	40
Schell-Vista	1	1	8	1	3	0	28
Twin Hills	1	1	6	2	1	0	40
Valley of the Moon	2	1	9	1	3	14	35
Windsor	1	0	4	1	1	0	24
Subtotal:	19	15	104	23	16	54.5	542
Volunteer Companies							
Annapolis	0	0	2	0	0	--	14
Bloomfield	0	1	3	0	0	--	9
Bodega	1	2	5	0	1	--	17
Camp Meeker	1	0	3	0	0	--	14
Ft. Ross	0	2	3	1	0	--	17
Geyserville	1	1	7	1	0	--	26
Jenner	0	1	3	1	0	--	16
Knights Valley	1	0	3	0	0	--	11
Lakeville	0	1	1	0	0	--	13
Mayacamas	1	1	4	0	0	--	17
Mountain Home	1	0	4	0	0	--	14
Occidental	1	0	5	1	0	--	24
Palmer Creek	0	0	0	1	0	--	11
Rio Lindo	1	0	3	0	0	--	17
San Antonio	0	0	7	0	1	--	31
Two Rock	1	0	5	0	0	--	26
Wilmar	0	1	3	1	0	--	23
Valley Ford	0	1	3	0	0	--	12
Subtotal:	9	11	64	6	2	--	312

Source: Sonoma County Department of Fire Services, 1986.

Notes

1. Excludes "sleepers" who provide night service and clerical staff.
2. Includes pumpers, tanks and brush response units.
3. CDF employs 70 seasonal firefighters during the summer fire season.

(Continued)

Table PF-9
Fire Protection Services, Personnel and Facilities Summary, 1986
(Continued)

Agencies	Stations: Full Service	Stations: Apparatus Storage	Vehicles: Fire[2] Suppression	Vehicles: Rescue	Vehicles: Misc.	Staff[1]: Paid	Staff[1]: Volunteer[1]
CSA's							
Sea Ranch	1	1	3	1	2	3	17
Timber Cove	1	0	2	0	1	0	13
Subtotal:	2	1	5	1	3	3	30
Cities							
Cloverdale	1	0	4	1	0	4	15
Healdsburg	1	0	5	1	1	9	18
Petaluma	3	0	7	3	2	44	0
Rohnert Park	2	0	5	0	3	48	23
Santa Rosa	8	0	11	0	3	106	0
Sebastopol	1	0	4	2	1	1	32
Sonoma	1	0	4	1	1	6	22
Subtotal:	17	0	40	8	11	218	110
Other Agencies							
Skaggs Island	1	0	2	2	1	13	4
Sonoma State Hosp.	1	0	4	1	2	17	0
USCG - Two Rock	1	0	3	0	1	9	11
Ca. Dept. of Forestry	10	0	14	0	0	50[3]	0
Subtotals:	13	0	23	3	4	89	15
Totals:	60	27	236	41	36	364.5[4]	1,008[4]

Source: Sonoma County Department of Fire Services, 1986.
Notes

1. Excludes "sleepers" who provide night service and clerical staff.
2. Includes pumpers, tanks and brush response units.
3. CDF employs 70 seasonal firefighters during the summer fire season.

DN:TBLPF.9

Personnel and Equipment Needs and Costs. The 1983 study found that the county as a whole was receiving "acceptable" levels of service, but was supporting more personnel and equipment than necessary to deal with "current and likely future demand". The perceived oversupply of fire equipment did not take into consideration the condition, serviceability or appropriateness of the types of fire equipment being used. An assessment as of 1986 indicated that much of the equipment used by volunteers was old, required a disproportionate amount of maintenance, and was designed for non-structural firefighting, although an increasing share of calls was for structural fires. Although the large numbers of volunteer personnel carried on the rolls of various departments (both volunteer companies and fire districts) could be perceived as an oversupply of manpower, not all volunteers can respond to all calls. Typically, a small portion of the volunteer staff respond to a majority of calls received As a result, a larger number of firefighters is required to staff a volunteer department than an equivalent all-paid department where a specified number of firefighters is on duty at all times.

Overall System Costs. The study found that the county's fire protection system was "relatively expensive" in 1983 given the dependence on non-full-time personnel. Although volunteer departments are relatively inexpensive in comparison to paid-staff departments, operating costs are still substantial. Costs associated with volunteer departments include capital items such as land acquisition, station construction and the initial purchase or replacement of fire apparatus, as well as operating costs for equipment maintenance and insurance, and other items. As a result, the costs of fire protection services in unincorporated portions of the increased from about $5 million in fiscal year 1982-83 to $7.5 million in fiscal year 1986-87.

6.3 SERVICE DEMANDS AND FACILITY NEEDS: 1986-2005

Projections of future growth in the unincorporated county indicate that after adjustments for anticipated annexations, the net increase in the number of housing units would be about 17,290 by 2005. However, demands for increased fire suppression and emergency medical services will not be generated by housing and population growth alone, or by related increases in commercial and industrial development; additional sources of demand are increases in tourism (estimated at 3 million persons in 1986) and continuing increases in level-of-service expectations resulting from urbanization and changes in the socio-demographic mix of the population.

The consequences of growth on demand for fire services have been demonstrated recently by the transition of the Bodega Bay and Windsor Volunteer companies to fire protection districts. The same trend can be expected to occur in other areas of the county, especially tourist destination areas, where call volumes have risen rapidly over the first half of the decade. Volunteer companies will be most affected by these trends.

Analysis of projected growth patterns by the Department of Fire Services (DFS) indicated that while existing facilities and equipment would need to be maintained, the potentially more pressing and costly needs would involve manpower. Medium- and long-range service demands will dictate a shift from fully volunteer-supported systems towards systems utilizing a mix of volunteer and paid personnel. Existing mixed-personnel systems will most probably move towards even greater reliance on paid personnel. The primary tasks with regard to fire services are to ensure that needed organizational changes occur in a timely and cost-effective manner and to secure revenue sources to adequately finance these changes.

6.4 GOALS, OBJECTIVES AND POLICIES

Issues. Several isues have emerged since the 1983 fire services study that warrant further evaluation.

1) The diverse and complex nature of the county makes it difficult to establish a common service level countywide even when the majority of the county is serviced by essentially the same type of delivery system. Call volumes, levels-of-service, and service expectations of residents vary widely from one area of the county to another.

2) The majority of the existing fire departments serving the county's unincorporated area are all volunteer and many are increasingly burdened by larger volumes of calls for service, especially for emergency medical services, and limited revenues to support their activities.

3) The year-2005 population projections presented in the Land-use Element should form the basis for an evaluation of future fire suppression and emergency medical service needs in greater detail than is possible in the context of a general plan. Emergency medical services should be one focus of such an evaluation, since medical calls in the first half of the decade have consistently overshadowed fire-related emergencies throughout the unincorporated county. The appropriate framework for such an evaluation is a countywide Fire Services Master Plan.

Goal PF-5 It is a goal of Sonoma County to facilitate the provision of cost-effective fire suppression and emergency medical services adequate to ensure that lives and property are protected.

Objective PF-5.1: It is the objective of Sonoma County to maintain, where feasible and supported by local residents, a fire suppression service system in unincorporated areas which is oriented towards use of volunteers.

Objective PF-5.2: It is the objective of the County of Sonoma to promote cooperative efforts among all fire and related emergency service agencies in the area of public education and awareness, especially in those areas isolated from emergency service providers either by distance or topography.

Objective PF-5.3: It is the objective of the county that fire protection systems be integrated into all new structures as a means of improving the future delivery of fire protection services.

Objective PF-5.4: It is the objective of the County to encourage more effective utilization of existing fire protection resources, including facilities, apparatus and personnel, by emphasizing the further development of an integrated countywide response system.

Objective PF-5.5: It is the objective of the County to continue to coordinate the provision of fire protection services in unincorporated areas and to coordinate the County's fire protection planning efforts with all other related agencies.

The County shall employ the following policies related to fire protection services:

PF-5a: A Fire Services Master Plan for Sonoma County, including the eight cities, should be prepared. Contents of the plan may include:

1) An evaluation of fire suppression and emergency medical service needs through year-2005, based on population projections presented in the land-use element.

2) An assessment of levels of service in relation to: projected growth; needs for additional facilities, equipment and personnel; local topography, road conditions and development patterns; the desires and expectations of local residents; and the ability of local revenue bases to accommodate expressed local preferences.

3) A statement of fire service objectives and policies at the countywide and local levels, and a specific description of needed actions or programs.

PF-5b: The Department of Fire Services shall coordinate its planning efforts with municipal fire departments, fire districts, volunteer fire companies and the California Department of Forestry for provision of fire protection services in unincorporated areas of the county.

PF-5c: When reviewing proposed projects of fire agencies for conformity with the general plan pursuant to Section 65402 of the California Government Code, a finding of consistency may be made only if the proposed project:

1) is designed to serve development at the densities or intensities and locations depicted on the land-use plan map; and

2) substantially complies with other relevant general plan goals, objectives and policies.

PF-5d: In reviewing proposals for new development, discretionary development permits shall not be approved unless and until the applicable fire agency has certified in writing its ability to serve the proposed development.

PF-5e: Requirements for reservation or dedication of lands for fire station sites, and/or fees in lieu of dedication for the purpose of developing facilities and acquiring equipment, may be established in areas encompassed by specific plans. Such requirements shall be imposed as conditions of approvals of discretionary planning and development permits, and may be applicable to building permits for construction of new residences.

PF-5f: The Sonoma County Department of Fire Services shall review and comment on any proposed changes in the boundaries of areas of state and local responsibility for wildland fire protection and the boundaries of local fire districts and volunteer companies.

7.0 SOLID WASTE MANAGEMENT SERVICES

7.1 INTRODUCTION

Since 1972, California law (Government Code, Section 66700 et seq.) has required cities and counties to prepare a Solid Waste Management Plan (SWMP). The purposes of the state's requirement are to:

(1) identify and reserve sites for the establishment or expansion of solid waste facilities, and

(2) ensure that land uses adjacent to or near solid waste facilities are compatible with those facilities.

Sonoma County, in cooperation with the cities in the county, prepared and adopted a SWMP in 1976. Pursuant to state law, the plan was reviewed and revised in 1980 and 1985. The Sonoma County SWMP, although not a part of the

general plan, is the principal planning document for solid waste management for the unincorporated county and the eight cities. Solid waste management facilities located in unincorporated areas, including landfills and transfer stations, are designated on the land-use plan maps; any proposal to add or delete sites from the SWMP will require a general plan amendment.

7.2 SOLID WASTE MANAGEMENT ISSUES

The planning period utilized in the Sonoma County SWMP extends through year-2004. Issues pertaining to solid waste management over the 1985-95 period include:

(1) The need to expand or replace the Healdsburg and Central landfills. The Healdsburg landfill is projected to reach capacity in 1987; the Central landfill is expected to reach capacity by 1994. A Central Landfill Replacement Study was in preparation as of 1986.

(2) The need to accomodate sludge disposal needs of the Santa Rosa Regional Wastewater Treatment Facility, the Petaluma Municipal Wastewater Treatment Facility, and facilities operated by the Sonoma Valley and Russian River County Sanitation Districts. Maximum disposal needs from all facilities are estimated at 45,000 cubic yards per year.

(3) Reduction of the quantity of waste deposited in landfills through additional emphasis on recyling.

7.3 GOALS, OBJECTIVES AND POLICIES

The Sonoma County SWMP contains goals, policies and short-, medium-, and long-range objectives, together with measures designed to guide solid waste management and disposal actions of the county and other applicable agencies. The following are intended to complement the adopted policies of the SWMP, without adding to, deleting from, or changing their meaning.

Goal PF-6: It is a goal of Sonoma County to assist in the provision of safe, environmentally sound, and cost-effective solid waste disposal facilities adequate to meet existing and projected future needs.

Objective PF-6.1: It is the County's objective to maintain the adopted Solid Waste Management Plan as the principal planning document for solid waste management in the county, and to update the SWMP every three years as required by California law.

Objective PF-6.2: It is the County's objective that all solid waste disposal facilities operate in accordance with standards for handling, processing and disposal established by California law and county and city ordinances.

The County shall employ the following policies related to solid waste management services:

PF-6a: The County shall coordinate the planning and operation of solid waste management facilities with adjoining counties and with the eight cities located within Sonoma County.

PF-6b: Solid wastes shall be considered and managed as a potential resource, and reduction, recycling and reuse of waste materials shall be promoted; residents and businesses shall be encouraged to employ practices that reduce the quantities of wastes generated and promote resource recovery.

PF-6c: The population projections and geographic distributions set forth in the Land-use Element of this plan shall be utilized as the basis for solid waste planning in future revisions of the SWMP.

PF-6d: Sites which are used for or planned for future use as solid waste management facilities, including transfer stations and sanitary landfills and other disposal sites, shall be designated by the "Public or Quasi-public - Solid Waste Management" category on the land-use plan maps.

PF-6e: Sanitary landfill sites shall not be located in any environmentally sensitive areas, such as the baylands, marshes, or areas containing rare or endangered species; such sites shall not be located within any area designated as open space by the Open Space Element, unless the landfill is screened from view along all roadways.

PF-6f: The re-use of solid waste disposal sites for outdoor recreation and open space, following completion of sanitary landfill operations, shall be encouraged.

PF-6g: Any proposed development or use which involves the transport, production, or utilization of a hazardous material, may be required, as a condition of approval of any discretionary planning or development permit, to prepare a hazardous waste management plan.

8.0 PUBLIC UTILITIES

8.1 INTRODUCTION

Certain public utilities, such as electricity, natural gas and telephone services, serve necessary and important public purposes but require transmission and maintenance facilties that can potentially have adverse effects on natural and scenic resources or neighborhood character. The intent

of the general plan, as expressed in Section 2.5 of the Land-use Element, is that facilities owned or operated by public utilities be classified in the Public/Quasi-Public land-use category. The purpose of this section of the Public Facilities and Services Element is to establish those circumstances where facilities of a public utility would require a "Public/Quasi-Public" designation on the land-use plan map, to prescribe standards for the permissible intensity of development on lands so designated, and to provide for the review of proposed facilities. Utilities that provide water for domestic use are discussed separately in Section 2.0 of this element.

8.2 ISSUES RELATED TO SIZE AND SITING OF PUBLIC UTILITIES

Specific types of facilities that might adversely affect natural and scenic resources or neighborhood character include transmission lines and substations and associated maintenance facilities. Impacts are primarily visual, but might also include adverse effects on natural resource production, property values, and biotic resources.

8.3 GOALS, OBJECTIVES AND POLICIES

Goal PF-7: It is a goal of Sonoma County to facilitate the provision of sites for transmission and maintenance facilities of public utilities in a manner that will assure that they are adequate to meet existing and projected future needs and compatible with maintenance of the quality of natural and scenic resources.

Objective PF-7.1: It is the County's objective that public utility distribution and maintenance facilities with the potential to significantly affect natural or scenic resources be sited and designed to minimize adverse effects.

The County shall employ the following policies related to the facilities of public utilities.

PF-7a: Public utility transmission or maintenance facilities occupying a gross land area in excess of one-half acre shall be designated for "Public/Quasi-Public" use on the land-use plan map; this policy shall not apply to transmission lines.

PF-7b: The intensity and extent of development of public utilities shall not exceed that necessary to serve the amount of population and employment growth projected in the Land-use Element.

PF-7c: Proposals for construction of new transmission lines or acquisition of easements for new transmission lines, shall be reviewed for conformity with open space and other general plan policies; the County shall request that such facilities not be

located within areas designated as community separators or biotic resource areas by the Open Space Plan maps. Preference shall be given to use of existing utility corridors over development of new corridors.

PF-7d: Undergrounding of new electrical transmission and distribution lines may be required in designated open space areas and in selected community areas; where feasible, existing overhead lines shall be encouraged to be converted to underground facilities in community areas.

PF-7e: Consolidation of multiple utility lines into common utility corridors shall be encouraged wherever practicable.

8.0 IMPLEMENTATION PROGRAMS: 1987-1992

Public Facilities Program 1: Public Facility Master Plans

Type of Program: Policy documents relying on the corporate powers of local governments
Responsible Agencies: Sonoma County Water Agency; Department of Public Works; various special districts
Timeframe: Priorities for plan preparation to be set by Board of Supervisors in 5-year Capital Improvements Programs for each department;
Budgetary Impact: Funding from agency budgets
Policy Reference(s): PF-1a and PF-2a

Program Description: Prepare and submit for adoption by the Board of Supervisors or other appropriate governing body master facilities plans for the Sonoma County Water Agency and all county-administered waste water management districts with contents as specified in Policies PF-2a and PF-3a, and as consistent with all elements of the general plan.

Public Facilities Program 2: Capital Improvements Program

Type of Program: Budget
Responsible Agency: Office of the County Administrator Sonoma County Water Agency, Department of Public Works, Fire Services Department, Office of Education, and Planning Department
Timeframe: On-going, annually
Budgetary Impact: No increase in agency budgets
Policy Reference: PF-1b and PF-2b

Program Description: Prepare and maintain annually updated five year plans and budget for facility improvements for the Sonoma County Water Agency and all county administered wastewater management districts, parks, and other facilities.

Public Facilities Program 3: School Facility Planning Program

Type of Program: Administrative
Responsible Agencies: Planning Department and Office of Education
Timeframe: On-going
Budgetary Impact: No increase in agency budgets
Policy Reference: PF-4a

Program Description: Provide maps, data and technical assistance as resources permit, to school districts in estimating the amount, rate and locations of projected population growth within unincorporated portions of their attendance areas.

Public Facilities Program 4: Ordinances establishing or authorizing development fees and/or dedication of land for public facilities

Type of Program: Subdivision Ordinance; other ordinances
Responsible Agency: County Counsel and Planning Department
Timeframe: Within two years of the adoption of the revised general plan
Budgetary Impact: No increase in agency budgets
Program Reference: PF-3g, PF-3h, Pf-4c, PF-4d, PF-5e

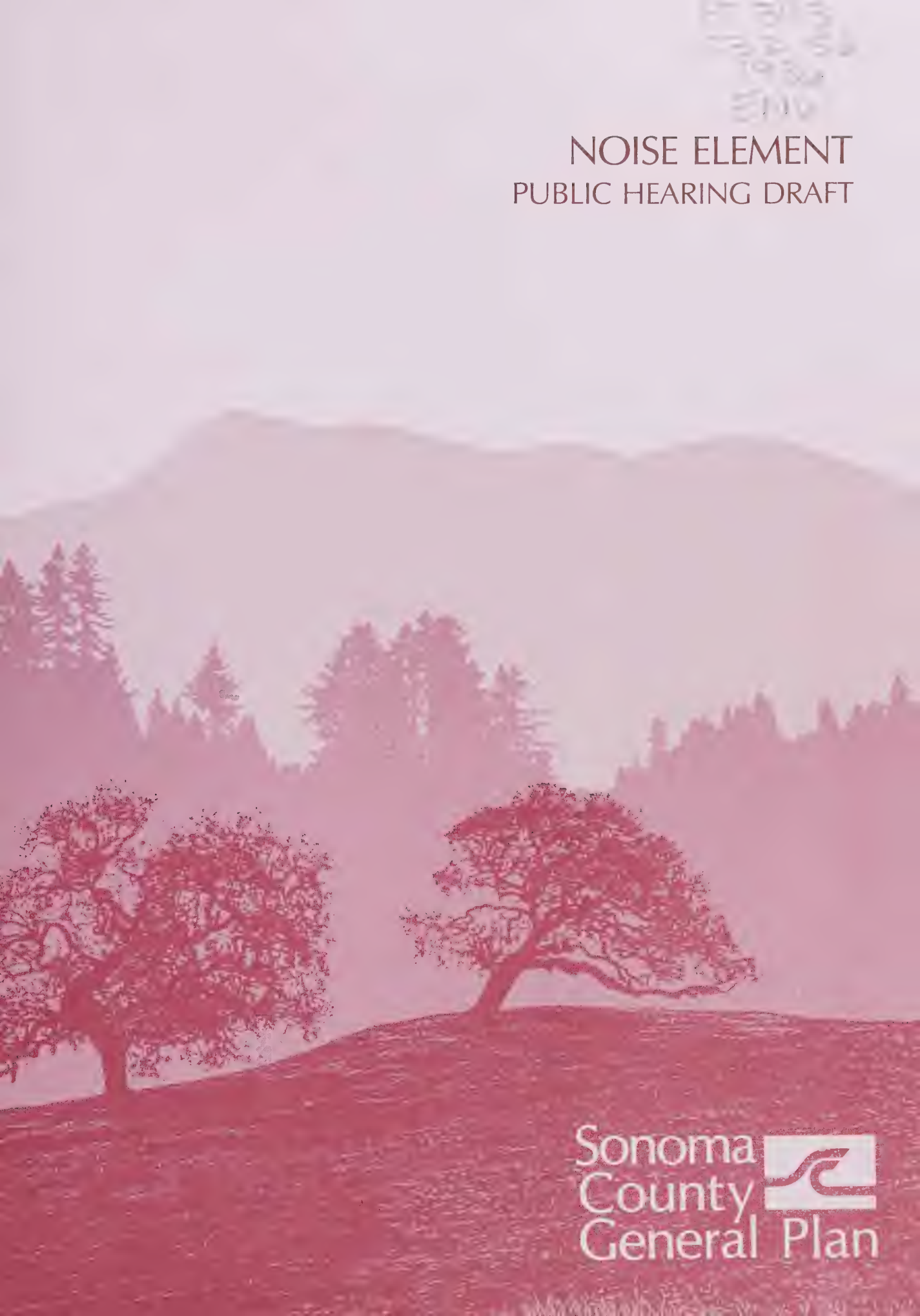
Program Description: Prepare for adoption by Board of Supervisors ordinances enabling the county to require the payment of fees and/or the dedication of lands for public facilities as a condition of approval for development projects. Said ordinances to be consistent with the provisions of the California Subdivision Map Act.

Public Facilities Program 5: Fire Services Master Plan

Type of Program: General policy
Responsible Agency: Fire Services Department
Timeframe: Within 2 years of the adoption of the revised general plan
Budgetary Impact: Funding from department budget
Policy Reference: PF-5a

Program Description: Prepare and submit for adoption by the Board of Supervisors a fire services master plan with contents as specified in Policy PF-5a.

NOISE ELEMENT
PUBLIC HEARING DRAFT



Sonoma County General Plan

PUBLIC HEARING DRAFT

Sonoma County General Plan

NOISE ELEMENT

Prepared for Public Hearings by the
Sonoma County Planning Commission

December 18, 1986

Brown-Buntin Associates, General Consultant
Mestre-Greve Associates, Aviation Noise Consultant

Sonoma County Planning Department
575 Administration Drive
Santa Rosa, California 95401

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1.0 INTRODUCTION

1.1 AUTHORITY AND PURPOSE

It is the intent of the Noise Element of the Sonoma County General Plan to provide mechanisms to mitigate noise conflicts where they presently exist and to minimize future noise conflicts by expressing policies and implementation measures that are designed to achieve compatibility between land uses.

The contents of the Noise Element and the methods used in its preparation were designed to conform to the requirements of Section 65302(f) of the California Government Code and the "Guidelines for the Preparation and Content of Noise Elements of the General Plan" adopted and published by the California Office of Noise Control (ONC) in 1976. The ONC Guidelines require that certain major noise sources and areas containing noise-sensitive land uses be identified and quantified by preparing generalized noise exposure contours for current and projected conditions within the community. Contours may be prepared in terms of either the Community Noise Equivalent Level (CNEL) or the Day-Night Average Level (Ldn)*, both of which are descriptors of total noise exposure at a given location for an annual average day. It is intended that the noise exposure information developed for the Noise Element serve as a basis for achieving land use compatibility within the community. It is also intended that noise exposure information be used to provide baseline levels and noise source identification for use in the development and enforcement of a noise control ordinance.

According to the Government Code requirements and ONC Guidelines, the following major noise sources should be considered in the preparation of a Noise Elment:

1. Highways and freeways
2. Primary arterials and major local streets
3. Railroad operations
4. Aircraft and airport operations
5. Local industrial facilities
6. Other stationary sources

Noise-sensitive areas to be considered in the Noise Element should include areas containing the following land uses:

1. Schools
2. Hospitals
3. Rest homes
4. Long-term medical or mental care facilities
5. Other uses deemed noise sensitive by the local jurisdiction

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* for an explanation of terminology used in this report refer to Appendix A: "Acoustical Terminology."

1.2 RELATIONSHIP TO OTHER ELEMENTS

The Noise Element is most related to the Land-use, Circulation and Transit, and Air Transportation elements of the general plan. Its relationship to the Land-use Element is direct in that the implementation of either element has the potential to result in the creation or elimination of a noise conflict between differing land uses. The Land-use Element achieves consistency with the Noise Element by preventing the development of incompatible adjacent land uses, preventing impacts upon noise-sensitive uses, and preventing encroachment upon existing noise-producing facilities.

The Circulation and Transit Element is linked to the Noise Element in that traffic routing and volume directly affect community noise exposure. For example, higher traffic volumes may produce increased noise in a residential area so that noise control measures are required to provide an acceptable noise environment. Similarly, re-routing traffic from a noise-impacted neighborhood may provide significant noise relief to that area. Implementation of the Circulation and Transit Element should include consideration of potential noise effects and measures to mitigate significant effects through modification of design and selection of route alignments.

The Air Transportation Element addresses the provision of air transportation services in the county and includes an assessment of airport noise exposure and land-use compatibility criteria. The standards and policies of the Noise Element are consistent with the noise standards expressed in the Air Transportation Element.

1.3 SCOPE AND ORGANIZATION

The Noise Element is to be applied to land development within the unincorported areas of Sonoma County. Environmental noise exposure is addressed in terms of existing (1984-1986) and projected future (2005) conditions. The element is organized into three major sections. The first of these, Section 2.0, provides an overview of noise effects, noise sources, methods of analysis and the existing noise environment in Sonoma County. Significant noise sources in the county are described to allow implementation of the Noise Element standards and to provide a description of the potential noise impacts associated with similar sources. The next major section (3.0) describes noise control issues and expresses policies which are organized in three groups: 1) land-use compatibility and development review , 2) management of transportation-related noise, and 3) control of industrial noise. Specific land-use compatibility criteria are established to reduce the potential for future noise conflicts. The last section expresses a short-term implementation program to effectuate noise policies.

A Technical Reference Report has been prepared which describes the effects of noise on people and techniques for noise control, including a Model Community Noise Control Ordinance for consideration by the county. General references and technical data for highway noise evaluations, the community noise survey and Sears Point Raceway are also included in the Technical Reference Report.

2.0 EXISTING AND PROJECTED FUTURE NOISE ENVIRONMENT

2.1 OVERVIEW OF NOISE IN SONOMA COUNTY

2.1.1 Noise and its Effects on People

Noise is defined as unwanted sound, and thus is a subjective reaction to characteristics of a physical phenomenon. The descriptors of human response to noise in current use are the results of many years of efforts to translate subjective reactions into a practical measurement system. The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content, but can be approximated by weighting the frequency response of a measured sound level. Because there is a strong correlation between "A-weighted" sound levels (expressed as dBA) and community reponse to noise, the "A-weighted metric has become the standard tool of environmental noise assessment.

Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such a hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise arise from interference with human activities such as sleep, speech, recreation, and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, and the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being is the basis for land use planning policies directed towards the prevention of exposure to excessive community noise levels.

In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and relative loss of "peace and quiet" is an inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

Table NE-1 illustrates expected public reaction to change in environmental noise levels. This table was developed on the basis of reactions by test subjects to changes in the levels of steady-state pure tones, broad-band noise, or to changes in levels of a given noise source. It is considered to be most applicable to noise levels in the range of 50 to 70 dBA, the usual range of voice and interior noise levels. The table is not directly applicable to public perception of identifiable intrusive noise sources in very quiet environments because of the difference in frequency content between background noise sources and intrusive sounds. Table NE-1 should, therefore, only be applied in a general manner to show the relationship between changes in sound energy, sound pressure levels and subjective reaction.

Table NE-1
Subjective Reaction to Changes in Noise Levels of Similar Sources

Change in Level, dBA	Subjective Reaction	Factor Change in Acoustical Energy
1	Minimum detectable Change (Laboratory)	1.26
3	Usually Noticeable Change	2.0
5	Definitely Noticeable Change	3.2
10	Twice (or half) as Loud as Before	10.0

Sources: Various, reported by Brown-Buntin Associates
Note: Additional information regarding noise measurement, statistical decriptions, and criteria for acceptable noise exposure is provided in the Technical Reference Report.

2.1.2 Noise sources in Sonoma County

There are several potentially significant sources of community noise within Sonoma County. The noise sources selected for study are:

All State Highways
Selected County Arterial and Collector Highways
Public-use Airports
Northwest Pacific Railroad (NWPRR) line operations
Sears Point International Raceway
Lumber processing operations
Mineral extraction operations
Asphalt and concreate batch plants
Gas well compressors
The Geysers geothermal power plants
Solid waste landfills and transfer stations

2.1.3 Methods of Noise Analysis

Analytical noise modeling techniques were used to develop generalized Ldn noise contours for some of the sources identified above for existing (1984-86) and future (2005) conditions. Such techniques generally make use of source-specific data including average levels of activity, hours of operation, seasonal fluctuations, and average levels of noise from source operations. Generally accepted analytical methods have been developed for a number of environmental noise sources including roadways, railroad line operations, railroad yard operations, industrial plants and aircraft/airport operations. Such methods produce reliable results as long as data inputs and assumptions

are valid for the particular sources being studied. The analytical methods used in the studies on which this element is based closely followed the recommendations of the State Office of Noise Control, and were supplemented where appropriate by field-measured noise level data to account for local conditions. It should be noted that the noise exposure contours referenced in the Noise Element are based upon annual average conditions, and are not intended to be site-specific where local topography, vegetation or intervening structures may significantly affect noise exposure at a particular location.

2.1.4 Community Noise Survey

As required by the Government Code and ONC Guidelines, a community noise survey was conducted by Brown-Buntin Associates to document noise exposure in areas of Sonoma County containing noise-sensitive land uses. The following noise-sensitive land uses were identified:

1. All residential uses
2. Schools
3. Long-term medical care facilities, such as hospitals, nursing homes, etc.

Noise monitoring sites were selected to be representative of typical conditions in areas of the county where such uses are located. Short-term noise monitoring was conducted during three periods of the day and night on May 28 and 29, 1986, so that reasonable estimates of Ldn could be prepared. Two long-term noise monitoring sites were selected to establish day-night statistical trends during the same period. The data prepared included the Leq and other statistical descriptors. Noise monitoring sites, measured noise levels and estimated Ldn values of each site are summarized in the Technical Reference Report; monitoring sites are shown by Figure NE-1.

Noise monitoring equipment consisted of Bruel and Kjaer Types 2218 and 2230 precision integrating sound level meters fitted with 1/2 inch microphones, a Larson-Davis Laboratories Model 700 environmental noise analyzer, and a Metrosonics dB 604 environmental noise analyzer. The measurement systems were calibrated in the field prior to use with acoustical calibrators and comply with all applicable requirements of the American National Standards Institute (ANSI) for Type I (Precision) or Type II (General Purpose) sound level meters. The community noise survey results indicate that typical noise levels in noise sensitive areas of Sonoma County are in the range of 40-50 dB Ldn, except in areas near the coastline where the surf produces ambient noise levels in excess of 50 dB Ldn, depending upon the proximity of the receiver. Noise from traffic on highways is the controlling factor for background noise levels in many areas of the county. Some residential areas are shielded from highway traffic noise by intervening topography, and those areas may experience noise levels of 45 dB Ldn or less. In general, the areas of Sonoma County which contain noise-sensitive uses are exceptionally quiet except along the major highways and arterials.

During the noise monitoring period, the relative absence of jet aircraft overflights in Sonoma County was noted except in areas very close to Sonoma County Airport. The county is not under any major commercial jet airways. The occasional commercial and military jet overflights appear to be at relatively high altitude, which reduces the noise impacts of individual overflights.

A frequently noted noise source during the survey was the operation of medium and heavy trucks on small county roads, usually associated with lumbering or mineral resource development activities. Each passage of such vehicles in a quiet rural setting represents a significant noise event, which suggests that noise control measures directed at truck maintenance and hours of operation would be effective in miniizing noise impacts of permitted resource development activities.

2.2 HIGHWAY-RELATED NOISE

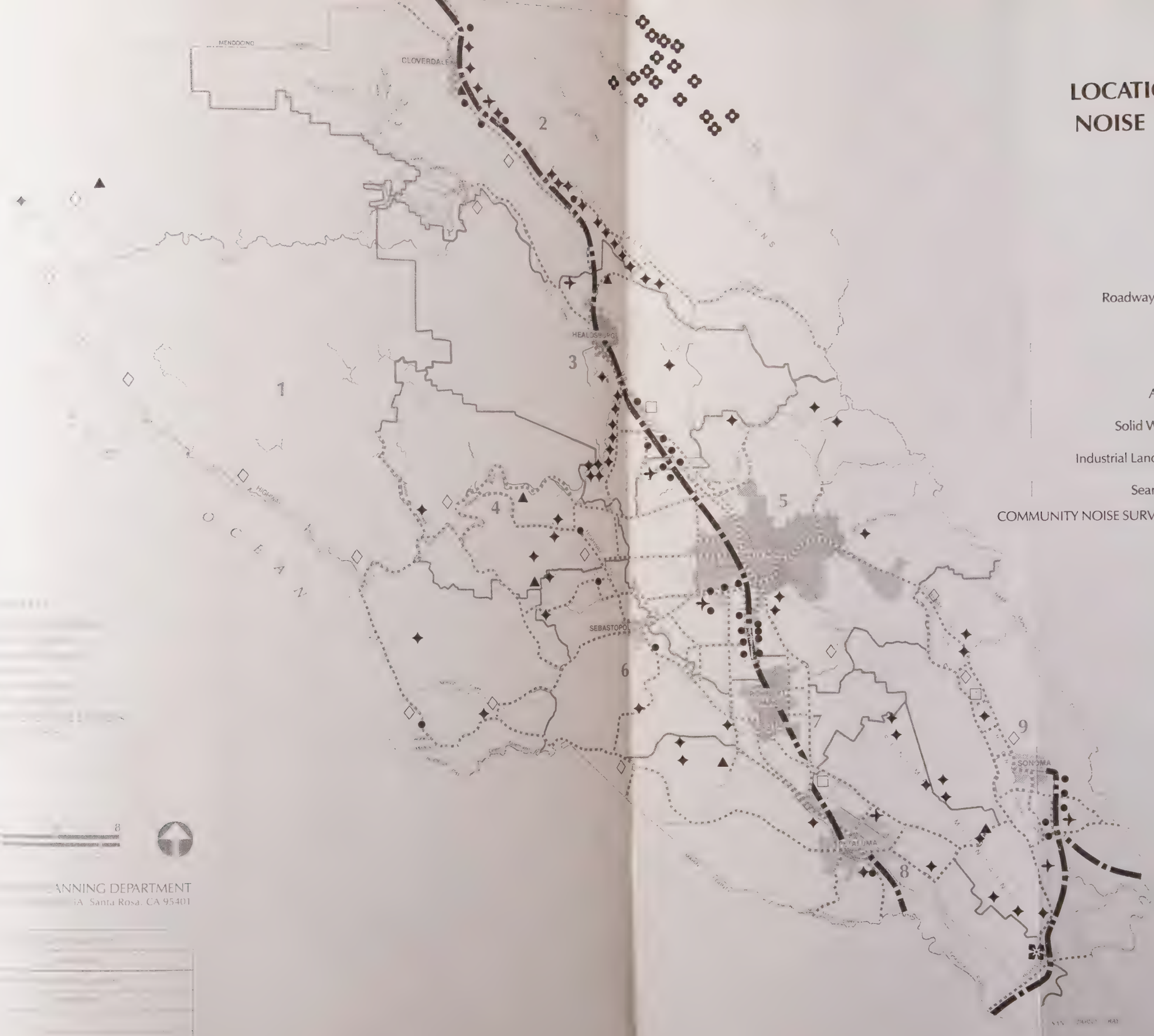
The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHA-RD-77-108), the analytical method presently favored for traffic noise prediction by CalTrans and most state and local agencies, was used to develop Ldn contours for the State highways and selected major roadways in Sonoma County. The FHWA Model is based upon reference energy emission levels for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distrance to the receiver and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly Leq values for free-flowing traffic conditions and is generally considered to be accurate within $\pm$ 1.5 dB. To predict Ldn values it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and adjust the traffic volume input data to yield an equivalent hourly traffic volume. In normal circumstances an increase of 100 percent in traffic volumes would be required to produce a noticeable noise increase of 3.0 dB.

Noise measurements were conducted in May and June of 1986 at five locations along State Highways in Sonoma County to allow calibration of the FHWA model to local topography, grade and climate conditions. Concurrent counts of traffic were made and projected to obtain hourly traffic volumes. Instrumentation used included Bruel and Kjaer Types 2218 and 2230 precision integrating sound level meters meeting ANSI Type I specifications; these were calibrated before use with acoustical calibrators. File data for two other locations along Highway 101 were also reviewed.

The purpose of traffic noise level measurements is to determine the accuracy of the FHWA model in describing the existing noise environment at the project site. Noise measurement results were compared to the FHWA model results by entering the observed traffic volume, speed and distance as inputs to the FHWA model. In general, the FHWA model was found to overpredict traffic noise levels in Sonoma County. To provide a conservative basis for traffic noise contour development, however, no adjustments were made to the FHWA model inputs.

Figure NE-1

LOCATIONS OF SIGNIFICANT NOISE SOURCES AND NOISE MONITORING SITES



Roadways (per 2005 traffic projections)

Public-use Airports (1986)

Railroads (1986)

Aggregate Resource Extraction

Solid Waste Disposal Facilities (1986)

Industrial Land-use Designations (proposed)

Sears Point International Raceway

COMMUNITY NOISE SURVEY SITES (1986)

24-hour monitoring

Short-term monitoring

8

ANNING DEPARTMENT
iA Santa Rosa, CA 95401

Traffic data representing annual average traffic volumes, truck mix and day/night traffic distribution for existing and future conditions were obtained from Caltrans and the Sonoma County Public Works Department. Future projections of annual average daily traffic volumes were based upon the traffic modeling studies conducted by DKS Associates as summarized in the Circulation and Transit Element. Using the traffic data and the FHWA methodology, traffic noise levels, as defined by Ldn, were calculated for existing and projected year-2005 traffic volumes.

Distances from the center of the roadway to Ldn contour values of 60 and 65 dB are summarized in the Technical Reference Report. It should be noted that since calculations did not take into consideration shielding caused by local buildings or topographical features, such distances should be considered as worst-case estimates of noise exposure along roadways. Noise contour maps have been prepared for projected future traffic conditions from the data contained in the Technical Reference Report and are available for public inspection at the Sonoma County Planning Department. Noise-significant roadways are shown in Figure NE-1.

2.3 AIRPORT-RELATED NOISE

Aircraft and airport noise exposures typically consist of a number of brief, relatively noisy events separated by long periods of relative quiet between aircraft overflights. The annoyance due to aircraft noise exposures is reasonably well predicted by using the CNEL descriptor, which averages the total noise exposure over an annual average day. In California, the 65 dB CNEL contour is defined by the Administrative code (Title 21) as the Noise Impact Boundary for airport noise exposures. Some airport land-use planning guidelines recommend the use of a 60 dB CNEL criterion for residential land uses near small general aviation airports, because such airports are often located in relatively quiet rural areas where public expectations for quiet may be heightened.

Control of noise from individual aircraft is generally preempted by the Federal Government, which has established noise limits for new aircraft certification. An airport proprietor may establish single-noise-event limits for individual aircraft if such limits are reasonable, non-discriminatory, uniformly enforced, responsive to demonstrated public concerns and consistent with available technology.

Evaluations of aviation-related noise in Sonoma County were undertaken in 1986 by Mestre-Greve Associates in association with preparation of the Air Transportation Element, and are summarized in a Technical Report, "Sonoma County Air Transportation Element: Noise Analysis". Noise is a major concern for residents near airports, particularly those where large aircraft are operating -- such as the county-owned Sonoma County Airport. Figure NE-2 indicates the level of noise exposure for areas surrounding the Sonoma County Airport as of 1986. Most of the aircraft noise in Sonoma County as of 1986

Figure NE-2 1985 Noise Contour; Sonoma County Airport

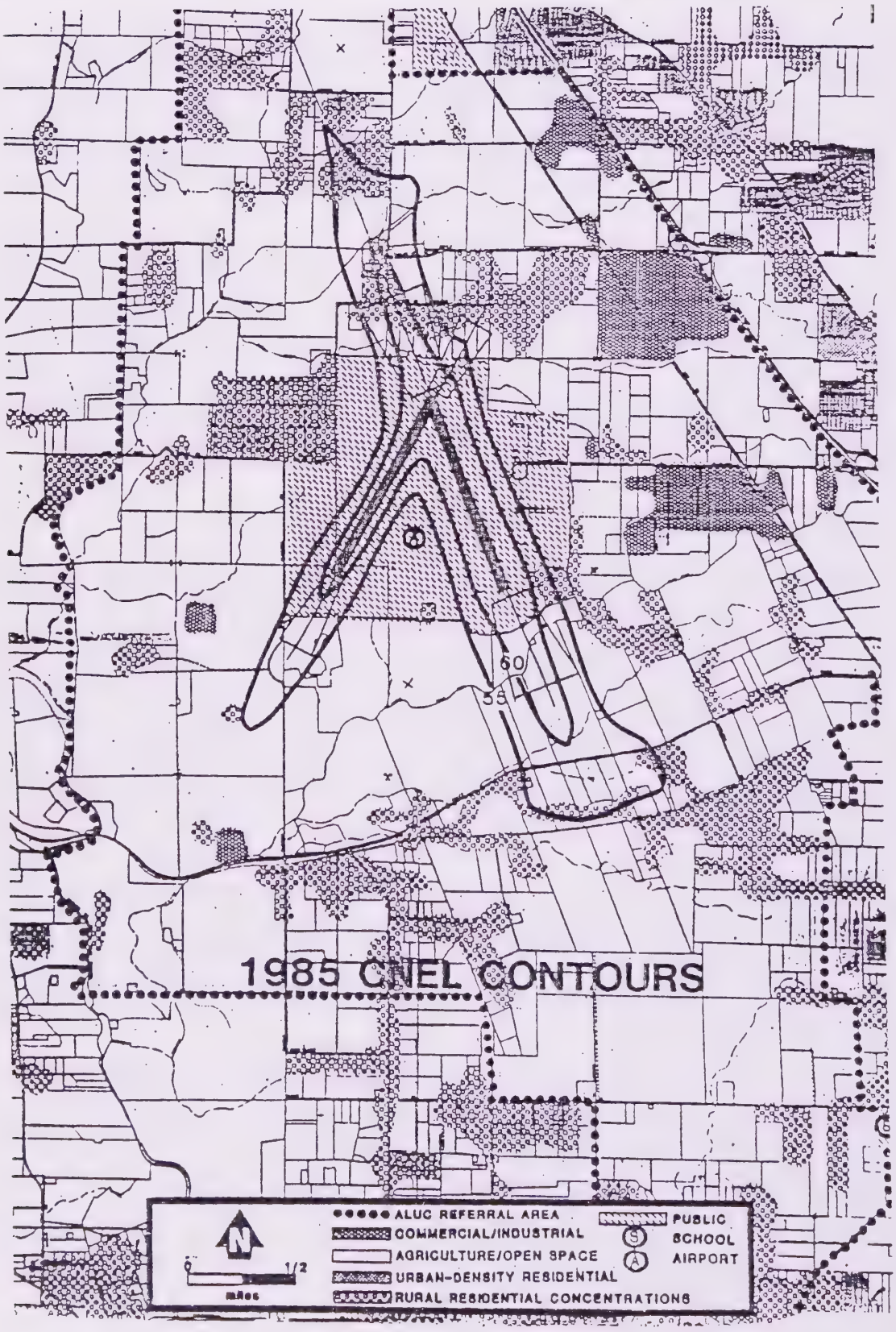
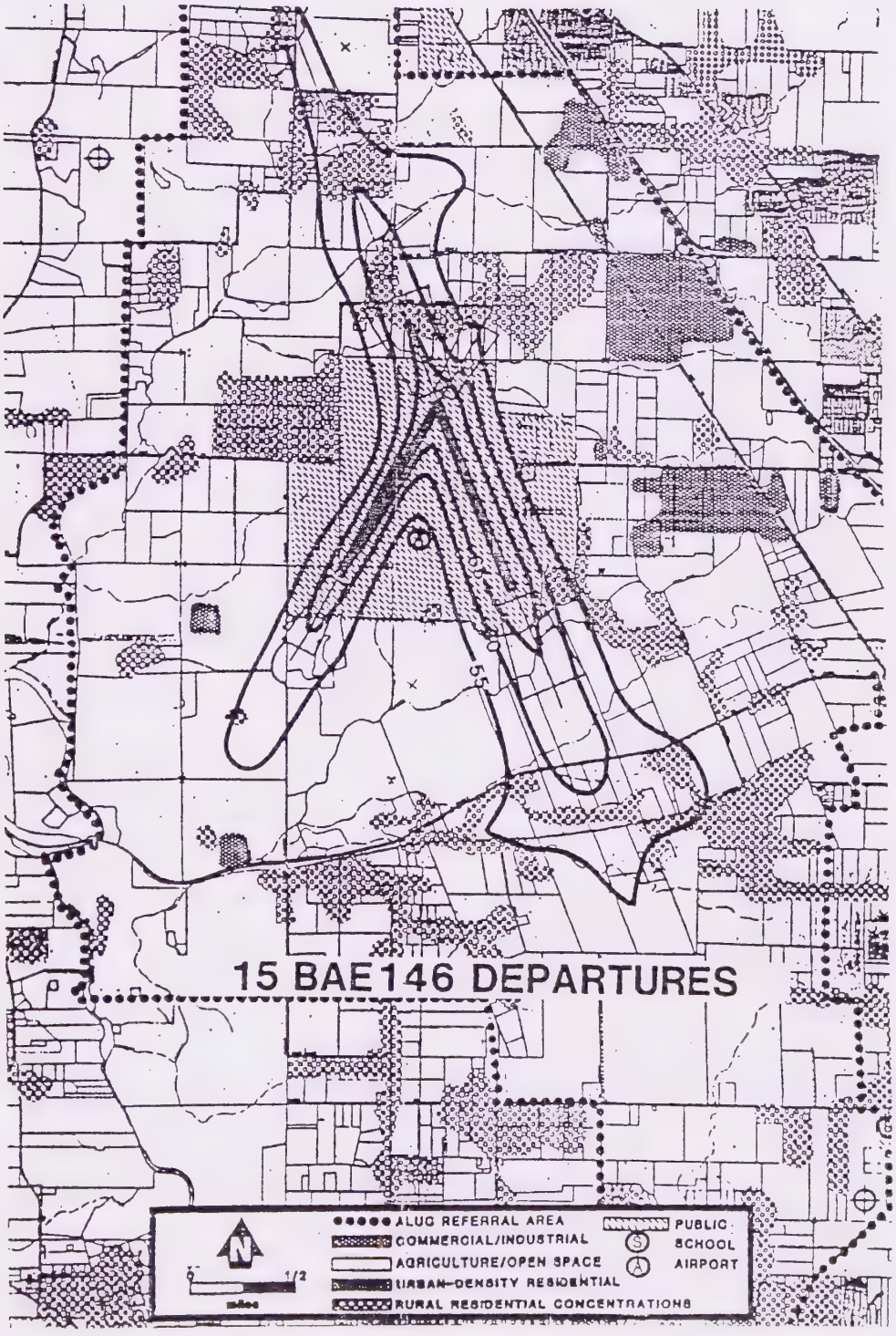


Figure NE-3 Year 2005 Noise Contour; Sonoma County Airport



was generated by general aviation aircraft. Noise contours at each airport were the result of operations by large numbers of relatively quiet single-engine aircraft. Although jet aircraft generate a high single-event noise, operations by jet aircraft were so infrequent as to not significantly contribute to the annualized cumulative noise impact measured on the CNEL metric. One exception to this finding was at Sonoma County airport, where aerial tankers contributed to the cumulative impact on the north end of the airport in the primary approach corridor.

A map depicting the projected year-2005 noise exposure at the Sonoma County Airport is shown in Figure NE-3. This diagram represents the noise exposure that would occur if the airport were to reach the planned year-2005 level of annual operations, as expressed in the Air Transportation Element. The annual operations of 256,000 includes 240,000 general aviation operations, 5,000 commuter airline operations, and 11,000 operations by scheduled airlines. Policies expressed in the Air Transportation Element establish the 60 CNEL contour as a "noise budget" and have the effect of restricting operations at the Sonoma County Airport so as to not extend the 60 CNEL to encompass additional lands. The projected "ultimate" noise contours for the various public-use airports in the county are shown in Figures NE-4a through NE-4e. These noise contours, which have been adopted by the Sonoma County Airport Land Use Commission (ALUC) as part of its Policy Plan, reflect what is regarded as the capacity levels of operations at the various airports, rather than the projected year-2005 levels of operations. The intent of the ALUC and of this plan is to provide protection from development of incompatible land-uses based on an "ultimate" time horizon rather than year-2005.

The Sonoma County ALUC has established a noise/land use compatibility matrix which identifies the acceptable range of noise levels for various types of land uses. The ALUC criteria are expressed in terms of exterior CNEL and maximum interior noise in residences. If the ALUC criteria are exceeded at the site of a proposed residential development, the development is deemed to be incompatible with the airport. The County of Sonoma may, under state law, override ALUC findings of incompatibility by a four-fifths vote of the Board of Supervisors if specific findings are made relating to the purposes of the State Aeronautics Act. Generally, under ALUC policies, new residential land uses are acceptable if exterior noise levels are at or below 60 dB CNEL; this is at least 5 dB more restrictive than California's Airport Noise Regulations. The lower limit is based on the quiet rural environment found in Sonoma County. The ALUC criteria for intermittent interior noise levels for residential structures are 60 dBA (daytime) and 55 dBA (nighttime), except for sleeping areas where the standard is 50 dBA (nighttime). The purpose of the interior single-event noise limit for residential land uses is to ensure that homes built near airports in areas with acceptable exterior noise levels are adequately designed to protect interior spaces from high single-event noise. The limits were established to prevent speech interference during the day and sleep interference at night.

Figure ME-4a Airport Capacity Noise Contour; Sonoma County Airport

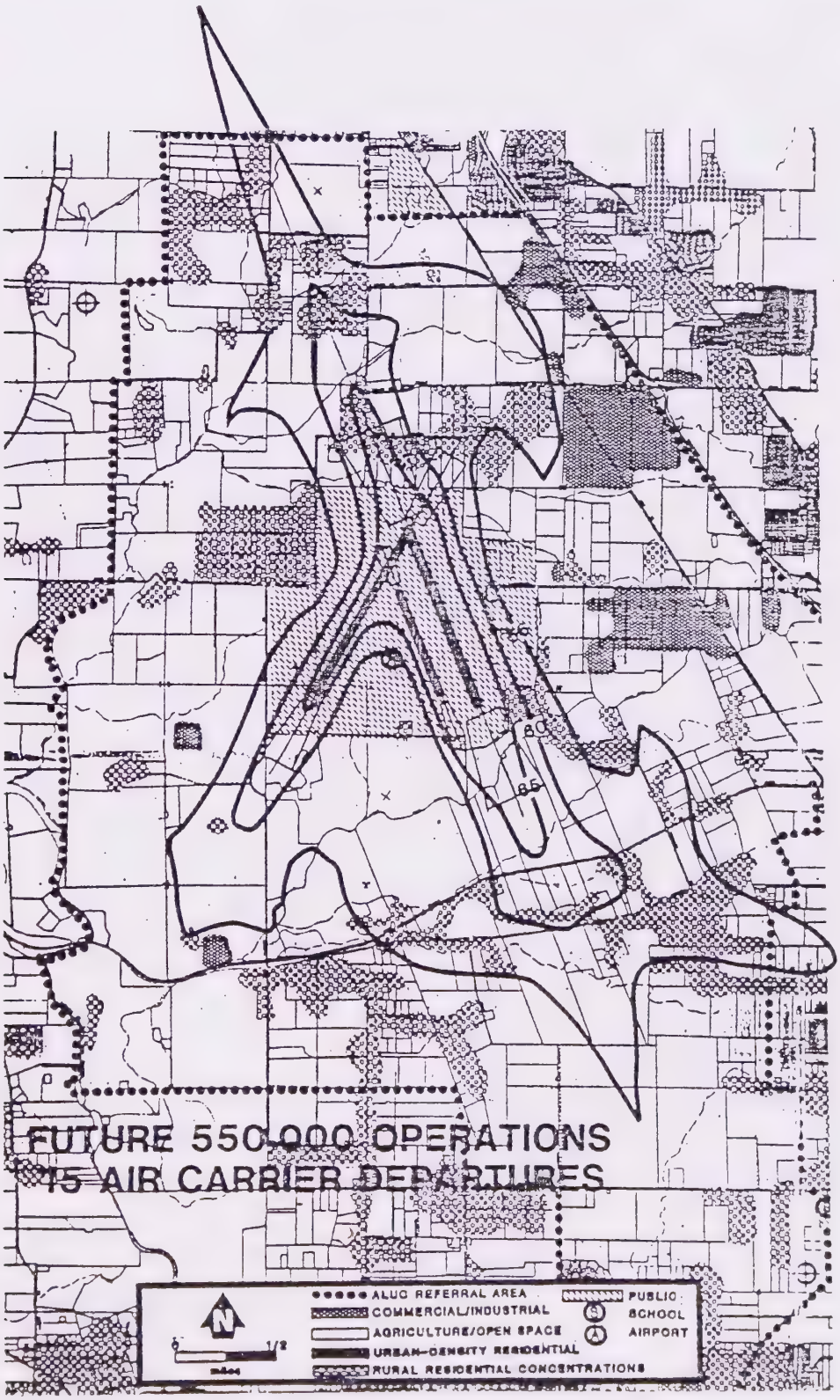


Figure NE-4b Future Noise Contour, Cloverdale Municipal Airport

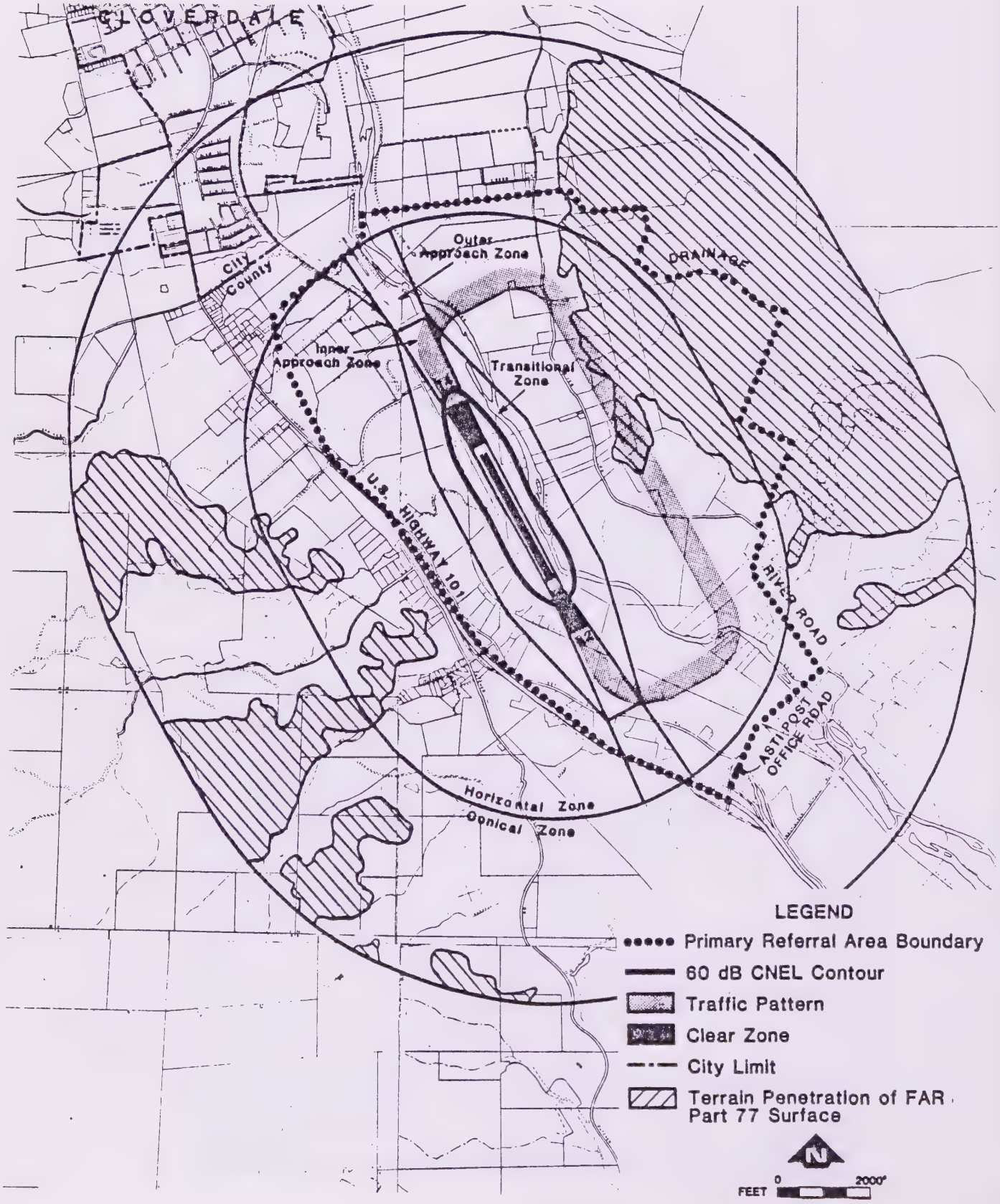


Figure NE-4c Future Noise Contour, Healdsburg Municipal Airport

Figure NE-4d Future Noise Contour, Petaluma Municipal Airport

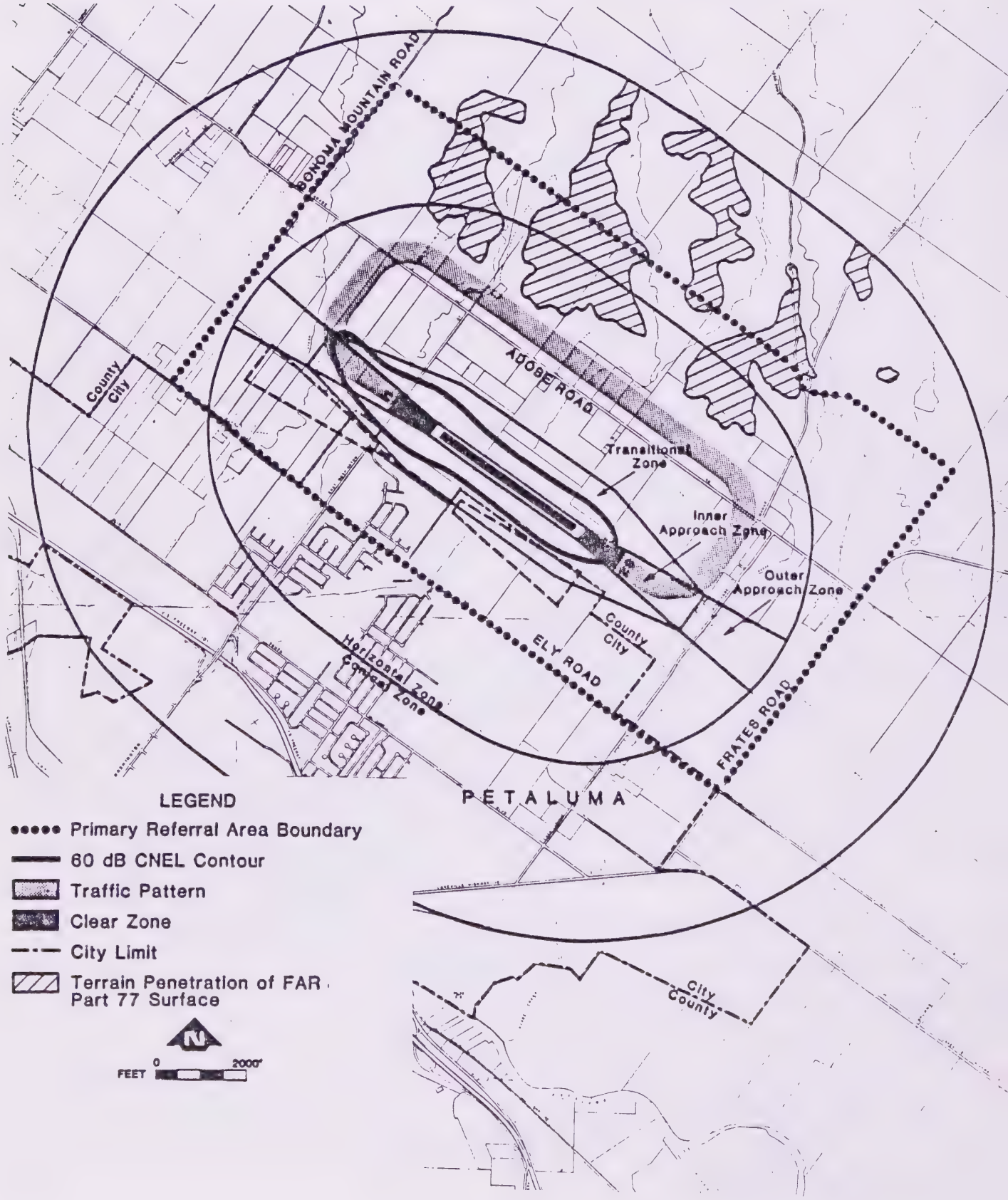


Figure NE-4e Future Noise Contour, Sonoma Valley Airport

Future airport operations, with and without air carrier operations, indicate that air carrier activity at Sonoma County Airport could be accommodated without unacceptable environmental impacts, provided the types of aircraft and number of aircraft operations are appropriately limited, as expressed in the Air Transportation Element.

2.4 RAILROAD NOISE

Railroad operations in Sonoma County consist of through-freight and local switching operations by the Northwestern Pacific Railroad. According to the Trainmaster's office, in late 1985 the average number of railroad operations through Sonoma County was two trains per day on Monday, Wednesday and Friday with no other operations during the week. More recent data reported by a local acoustical consultant indicated that these two trains sometimes operated up to six days per week, supplemented by two "locals" during daytime hours. Such variation in railroad scheduling is not unusual, as the level of activity varies with seasonal demands and other economic factors. Through trains are usually composed of one or two locomotives with 20 to 90 cars, depending upon shipping demands. Local trains are generally shorter. Whether the number of railroad operations was likely to change significantly in the future was unknown as of 1986.

Noise levels from railroad operations were evaluated using the "Simplified Procedure for Assessment of Noise Emitted by On-line Railroad Operations" (Wyle Research Technical Memorandum No. 59197-1, 1974) which calculates noise levels based upon the frequency, type and time of day of railroad operations. A "worst-case" assumption of two trains during daytime hours and two trains at night was made. In terms of Ldn, noise levels from main line railroad operations in Sonoma County are considered noise-significant (greater than 60 dB) within about 300 feet of the railroad centerline. Noise levels from individual train movements on the main line would, therefore, be expected to result in cumulative and short-term impacts for sensitive receivers located near the tracks. It is estimated that, at distances of approximately 100 feet from the tracks, maximum noise levels from passing locomotives and cars would range from 80-90 dBA. Maximum noise levels from the warning horn at the same location would range from 95-105 dBA. Generalized Ldn contours for railroad operations have been prepared to illustrate the extent of existing main line railroad noise exposure in Sonoma County and are available for public inspection at the Sonoma County Planning Department.

2.5 SEARS POINT INTERNATIONAL RACEWAY

The Sears Point Raceway provides facilities for road racing and drag racing. The race schedule includes a variety of professional road racing, SCCA amateur road races, AFM motorcycle races, classic car meets, go-kart races, car club outings and drag racing. Sears Point is also home to the Bob Bondurant School of High Performance Driving, which utilizes the facilities Monday through

Thursday. Racing events occur nearly every weekend of the year, and drag racing is held every Thursday night from early March through mid-November. With the exception of the Thursday night drag races, the racing events are typically held during daytime hours.

Noise mesurements were performed for a NHRA drag racing meet at Sears Point International Raceway on June 22, 1986; the results are summarized in the Technical Reference Report. Maximum noise level (Lmax) contours for worst-case drag racing activities at Sears Point Raceway were prepared from the noise measurement data to allow comparison to the performance standards of the Noise Element. Of all the racing activities, drag racing provides the greatest potential for noise conflicts due to the very high sound pressure levels produced by unmuffled alcohol-burning vehicles. As of 1986 there were no Top Fuel races at Sears Point, so that sound levels were not as great as would be realized if the nitro-fueled vehicles were to race. Drag racing, by its nature, is a test of the ultimate performance of vehicles. All possible impediments to performance are eliminated by vehicle design, which precludes use of mufflers as noise control measures, except in Stock classes. Noise control measures for drag racing are therefore limited to providing shielding by barriers or natural topography, curfews to minimize nighttime conflicts, or prohibition of racing.

For other types of racing, mufflers may be a viable means of noise control, if required on a regional or national basis. The SCCA and the AMA, for example, impose muffler requirements on autos and motorcycles competing in events sanctioned by those bodies. International and national sanctioning bodies such as NASCAR, USAC and IMSA typically have no specific noise control requirements for vehicles competing in their events. For international and national racing events, noise control options are therefore limited in the same manner as for drag racing.

At Sears Point, the constraints upon control of racing noise at the source indicate the importance of maintaining a separation of noise-sensitive land uses from the raceway. To ensure the long-term viability of the raceway, encroachment by residential and other noise sensitive land uses would have to be prohibited.

2.6 INDUSTRIAL NOISE SOURCES

The production of noise is an inherent part of many industrial processes, even when the best available noise control technology is applied. Noise production within an industrial facility is controlled indirectly by Federal and State employee health and safety regulaitons (OSHA and Cal-OSHA), but exterior noise emissions from industrial operations have the potential to exceed locally acceptable standards at noise-sensitive land uses. Industrial noise control issues focus upon two objectives: to prevent the introduction of new noise-

producing uses in a noise-sensitive area, and to prevent encroachment of noise-sensitive uses upon existing industrial facilities. The first objective can be achieved by applying performance standards to proposed new industrial uses. The second objective can be met by requiring that new noise-sensitive uses in proximity to existing industrial facilities include mitigation measures to ensure compliance with the same performance standards.

2.6.1 Representative Industrial Sources

The following descriptions of industrial noise sources existing in Sonoma County as of 1986 are considered to be representative of the relative noise impacts of such uses. Furthermore, these uses comprise specific noise sources which should be considered in the review of development proposals in their environs. The general locations of these noise sources are shown by Figure NE-1.

Standard Structures, Inc.; Windsor Area. This facility is a large wood processing operation where the primary products are glue-laminated beams and "I-joists". Noise sources at this location included cyclones, fans and baghouses. Weekday hours of operation during peak season were 6 a.m. to midnight; off-season hours were typically 6 a.m. to 6 p.m. The measured noise level due to machinery operations was 55 dBA at the north property line. The Ldn 60 dB contour was located within the property boundaries.

Louisiana-Pacific Sawmill; Cloverdale Area. The Louisiana-Pacific sawmill facility produced dimensioned lumber. Major noise sources included saws, a planer, fans, sorting lines, log loaders and forklifts. Heavy trucks delivered logs along a river levee access road. Peak season hours of operation were 6 a.m. to 3 a.m., with cleanup activities continuing over the remaining hours of the day. Off-season hours were 7 a.m. to 2 a.m. Work shifts were normally Monday-Friday plus two Saturdays per month. Noise from the Louisiana-Pacific sawmill was measured to be 53 dBA at the east bank of the Russian River. Onsite, noise due to chippers and fans was measured at 70 dBA at a distance of 200 feet. The 60 dB Ldn contour due to sawmill operations was located within the Louisiana-Pacific property boundaries, but noise from heavy trucks along access roads can be significant during the peak season. The relatively high sawmill noise levels during nighttime hours will limit the potential for future residential development near the sawmill complex.

Reusers, Inc; Cloverdale Area. This facility consisted of a wood by-products processing plant where bark was sorted, sized and shipped to other users. Heavy truck traffic occured frequently to and from the plant via Santana Lane. Typical hours of operation were 7 a.m. to 6 p.m. weekdays. The measured noise level at Santana Lane was 58 dBA, corresponding to an Ldn value of about 54 dB. The Ldn 60 dB contour due to onsite operations was located within the property boundaries.

Louisiana-Pacific Remanufacturing Plant; Cloverdale Area. The Louisiana-Pacific remanufacturing plant produced finished lumber, siding and panels. Major noise sources at this location were a planing mill and a chipper. Hours of operation were typically 7 a.m. to 3:30 p.m. weekdays. At Asti Road, the noise level due to generalized plant operations was measured as 52 dBA. Noise due to the chipper was measured as 49 dBA at about 400 feet, near the railroad tracks west of the facililty. The 60 dB Ldn contour was within the property boundaries.

Harvin Hardwoods, Inc.; Cloverdale Area. Bedroom furniture was the primary product for this facility. A 30-inch planer and two molders were located inside the shop building. Primary noise sources were a large cyclone near the front of the property line. At the railroad line, the maximum observed fan noise level was 60 dBA at a distrance of 50 feet. The noise level at the intersection of the railroad and Airport Road was 50 dBA. Hours of operation were typically during daytime hours (one shift), although night shifts were sometimes employed. The 60 dB Ldn contour was within the property boundaries.

Rolando Lumber Company; Cloverdale Area. The Rolando Lumber company was a lumber distribution and remanufacturing facility producing wood siding and paneling. Saws, fans and a planing mill were the primary noise sources. The measured noise level at the river levee road was 42 dBA. Hours of operation were typically 7 a.m. to 3:30 p.m. weekdays, although occasional night shifts were employed. The 60 dB Ldn contour was within the property boundaries.

Hot Rocks, Inc. Asphalt Batch Plant; Cloverdale Area. This facility included a gas-fired asphalt batch plant and an aggregate plant. Typical hours of operation for the batch plant were 7 a.m. to 3 p.m. on a busy day, while the aggregate plant at times operated from 6 a.m. to 10:30 p.m. Work days were Monday through Saturday. The primary noise source at this facility was an asphalt kiln, or burner, which produced low frequency sound. The measured noise level due to the burner was 79 dBA at a distance of about 500 feet. The 60 dBA Ldn contour fell within the property boundaries. Noise from the burner was reportedly audible west of the property and had resulted in complaints.

Claremont Energy Gas Well; Santa Rosa Area. This gas well installation (John Rice Well No. 1) was located on Gilchrist Road between Highway 116 and Woodworth Road. The compressor unit was completely enclosed. The engine exhaust was ducted from the top of the building and was barely audible at a distance of about 100 feet. The noise standard originally applied to this installation was a maximum level of 45 dBA at the nearest residences, but tht standard was later amended to require virtual inaudibility. With wind blowing at 15 -20 mph, it was not possible to measure the noise produced by this compressor unit at the north property line. Measured noise levels of about 35 dBA at the nearest residences have been previously reported.

Wineries: various locations. As of 1986 there were over 120 commercial wineries operating in unincorporated Sonoma County, varying in size from small family-owned wineries producing several thousand gallons of wine annually to several large facilities bottling more than a million gallons. Wineries are typically located in very quiet rural, agricultural environments, where ambient noise is primarily related to highways. Exterior noise generated at wineries is limited to the crush season in late summer and early fall, except for vehicular noise associated with deliveries and shipping. The seasonal noise is expected generally to be less than 60 dBA at distances greater than 300 feet from the grape dumping and crush area.

2.6.2 Potential New Industrial Noise Sources

Potential new industrial noise sources will be located in the areas designated for industrial use by the Land Use Element. Development proposals for these locations and for adjacent residential areas will be reviewed for consistency with the performance standards expressed in Section 3.1 of this element to prevent the creation of future noise conflicts.

2.7 NOISE ASSOCIATED WITH MINERAL EXTRACTION

The development of mineral resources in Sonoma County is effectively addressed by the Aggregate Resources Management Plan adopted in October 1981. The Plan indicates areas within Sonoma County where mineral resources may feasibly be developed by means of river, flood plain and hillside quarries. These areas should be considered as potential noise sources during review of proposed noise-sensitive uses at nearby sites. Noise sources associated with river and floodplain quarries include bulldozers, drag lines, scrapers, loaders, haul trucks and separation plants. The diesel-powered equipment described above is relatively mobile and may impact a particular area along the river or floodplain for a relatively short time, moving as the resource is depleted. The separation plant may be stationary, however, and could have long-term effects on neighboring properties. Hillside quarries may utilize some or all of the above-described equipment in a relatively confined area; blasting may also occur periodically during the normal operation of the quarry.

Sonoma County Ordinance No. 3437, adopted in January 1985, regulates surfae mining and reclamation. This ordinance includes noise performance standards which are applied at the boundaries of the mineral resource zoning district. The ordinance states that more stringent noise standards may be required as permit conditions when particular local circumstances warrant additional protection of potentially affected areas. The ordinance also includes a provision that any noise control measures prescribed as conditions of a permit may be superseded by noise control regulations subsequently enacted by the County. The performance standards of the Noise Element are complementary to and consistent with Ordiance No. 3437, and should be applied to use permits for mining where warranted by the proximity of noise-sensitive receivers to proposed uses.

2.8 NOISE ASSOCIATED WITH GEOTHERMAL EXPLORATION AND POWER PRODUCTION

There are over 20 geothermal power plants at The Geysers area, which includes portions of both Sonoma and Lake Counties. Unocal (Union Oil Company of California) is the largest single operator in the area with 16 power plants as of 1986. Power production is basically a process of collecting live steam at a well head and piping the steam to a turbine installation which drives an electrical generator. Noise may be produced by steam release during drilling and for pressure relief when turbines are shut down or emergencies occur. Under normal operating conditions, the primary noise sources of geothermal power plants are cooling towers and heavy truck operations.

Steam is generally released during well drilling to cyclonic separators which help to suppress noise while removing hydrogen sulfide from the vented air steam. The separators emit noise levels up to 90 dBA at 50 feet, which is comparable to the noise produced by a diesel engine. When a geothermal power plant is online, there may be infrequent steam releases from emergency pressure relief valves. When a power plant is shut down, the wells are also shut down and steam is released to rock mufflers. Steam lines must be cleared by venting after wells are returned to operation; such releases can be controlled by use of truck-mounted mufflers.

Mitigation measures are avilable for noise due to steam release for routine operations such as shutdowns, line clearing and drilling. Under certain circumstances, blow-down valves must be used to exhaust water from wells in which pressure has dropped. Noise from these releases is uncontrolled, though of short duration.

Routine operation of the geothermal power plants, however, is marked by relatively constant noise emissions from cooling tower fans and by the noise of local truck traffic. In these respects the noise impacts of geothermal power plants are similar to those of other industrial facilities employing cooling towers. The remote location of the Geysers area and the absence of nearby residential development limits the potential for land-use conflicts in Sonoma County due to geothermal plant noise. The County has imposed a maximum noise level requirement of 65 dBA at the boundaries of each leasehold to reduce the potential for noise conflicts outside the Geysers area.

2.9 NOISE ASSOCIATED WITH SOLID WASTE DISPOSAL

Noise associated with solid waste disposal and transfer facilities is produced by heavy equipment use and truck movements. During operating hours, landfill operations produce noise from onsite use of bulldozers, scrapers, compactors and front loaders. At transfer stations, onsite noise may be produced by the users, but the most significant noise source is the use of heavy or medium trucks to remove wastes and replace bins. Some transfer stations may use front loaders onsite to manage waste storage. The access roads for landfills and transfer stations may be significant sources of community noise due to the heavy volume of refuse-hauling trucks, transfer trucks and automobiles.

Noise impacts of solid waste facilities are generally limited to daytime as such operations are typically open only during the daylight hours. Onsite noise may be produced in early morning or evening hours during cover and maintenance operations. Two landfill operations were evaluated for the Noise Element: the Central Landfill near Cotati and the Healdsburg Landfill.

Healdsburg Landfill. The Healdsburg Landfill was located on a hilltop overlooking Alexander Valley Road. Diesel-powered equipment in use at this site included a small bulldozer, a large Caterpillar, and articulated compactor and a self-propelled belly scraper. The working face of the landfill was largely shielded from the nearest dwellings by topography. Noise produced by trucks climbing the landfill access road was expected to be audible at the nearest residences along Alexander Valley Road, but was not expected to be significant in terms of cumulative (Ldn) noise exposure. This site is slated to be converted to a transfer station after the landfill capacity is reached. The 60 dB Ldn contour due to landfill operations was within the site boundaries as of 1986.

Sonoma Central Landfill; Cotati Area. The Central Landfill was located in a sparsely developed agricultural area southwest of Cotati. The landfill was open from 7 a.m. to 4 p.m. Diesel-operated equipment in use at this location included an articulated compactor, a belly scraper and a bulldozer. This equipment is moved to different areas on the site as the working face of the landfill advances. Other noise sources associated with the landfill operation were medium and heavy trucks which haul refuse to the site. Outside the landfill boundaries, noise from onsite equipment operation was barely audible, while the noise due to trucks on the access roads was pronounced. The nearest sensitive receiver locations are houses across Meacham Road, which may be affected by noise from truck traffic on the public roadways. The 60 dB Ldn contour due to landfill operations was located within the site boundaries as of 1986.

3.0 NOISE ISSUES, POLICIES AND STANDARDS

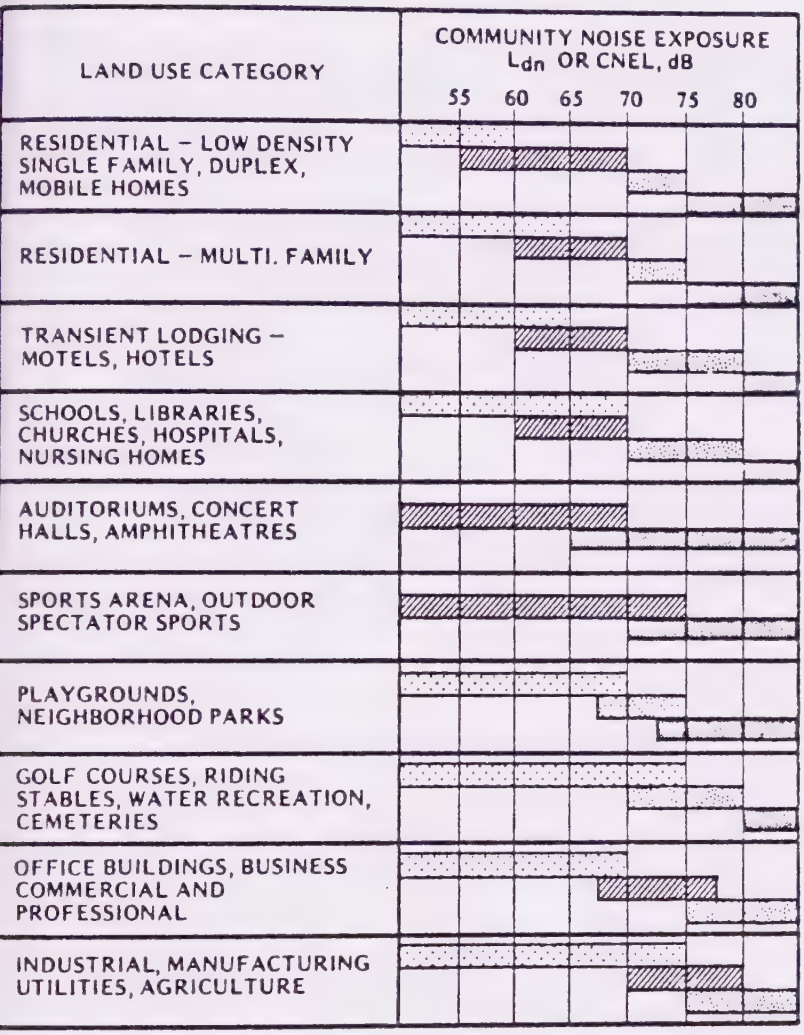
3.1 LAND USE COMPATIBILITY AND DEVELOPMENT REVIEW

Introduction. The State Office of Noise Control's (ONC) "Guidelines for the Preparation and Content of Noise Elements of the General Plan" include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The ONC guidelines contain a land-use compatibility table, shown as Figure NE-5, which describes the compatibility of different land uses with a range of environmental noise levels in terms of Ldn or CNEL. Figure NE-5 indicates the sensitivity of different land uses to their noise environment and is intended to illustrate the range of noise levels which would allow the full range of activities normally associated with a given land use. For example, exterior noise levels in the range of 50 - 60 dB Ldn are generally considered acceptable for residential land uses, since these levels

Figure NE-5

LAND USE COMPATIBILITY FOR COMMUNITY NOISE

SOURCE: California Department of Health, Office of Noise Control, "Guidelines for the Preparation and Content of Noise Elements of the General Plan", 1976, Berkeley.



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

CONSIDERATIONS IN DETERMINATION OF NOISE–COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL of L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

usually allow normal outdoor and indoor activities such as sleep and communication to occur without interruption. Industrial facilties, however, can be relatively insensitive to noise and may often be located in a noise environment of up to 75 dB Ldn without significant adverse effects.

Noise compatibility criteria based upon Ldn values are to be applied in evaluations of proposed noise-sensitive land uses with respect to established transportation noise sources, such as traffic on public roadways, railroads and at airports. The applicability of Ldn-based criteria for such sources has been well documented in terms of expected public response and legal responsibilities.

The noise standards in Table NE-2 are to be applied as performance standards for industrial and commercial land uses and other land uses involving locally-regulated noise sources which may affect noise-sensitive land uses. Similarly, the noise standards in Table NE-2 are to be used to determine whether a proposed noise-sensitive use is compatible with an exisitng locally-regulated noise source.

Table NE-2

Noise Level Performance Standards for New Land Development Projects

Category	Cumulative Duration of Noise Event in any one-hour period	Exterior Noise Level Standards, dBA	
		Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30 Minutes	50	45
2	15 "	55	50
3	5 "	60	55
4	1 "	65	60
5	0 "	70	65

Noise from single occurrences such as the passage of locomotives, heavy trucks or aircraft should also be evaluated in terms of single-event noise level standards. The maximum noise level created by such an event may have the potential to result in activity interference even though the cumulative noise exposure in terms of Ldn is within acceptable limits. The potential for sleep disturbance is usually of primary concern in such cases, and should be evaluated on a case-by-case basis.

GOAL NE-1: It is a goal of Sonoma County to protect its citizens from the harmful effects of exposure to excessive noise and to achieve a physical environment in which people and each land use may function without impairment from noise.

Objective NE-1.1: It shall be Sonoma County's objective to provide sufficient noise exposure information in the General Plan so that existing and potential noise impacts may be effectively evaluated in the land-use planning and project review processes.

Objective NE-1.2: It shall be Sonoma County's objective to develop and implement measures to abate and avoid exposure of people to excessive noise levels.

Objective NE-1.3: It shall be Sonoma County's objective to protect areas within the County where the present noise environment is deemed tranquil from intrusion of new noise sources which would substantially alter the noise environment.

The following policies shall be utilized by Sonoma County in evaluating land-use compatibility and in review of discretionary planning and development permits:

NE-1a: Areas within Sonoma County shall be designated as noise-impacted if exposed to existing or projected exterior noise levels exceeding 60 dB Ldn, 60 dB CNEL, or the performance standards of Table NE-2.

NE-1b: Noise created by non-transportation-related noise sources associated with new projects or developments shall be controlled so as not to exceed the noise level standards set forth in Table NE-2 as measured at any affected residential land use situated in either the incorporated or unincorporated areas. New residential development shall not be allowed where the ambient noise level due to non-transportation-related noise sources will exceed the noise level standards as set forth in Table NE-2. Exceptions to the standards shall be limited to the following:

1) In the event the measured ambient noise level exceeds the applicable noise level standard in any category expressed in Table NE-2, the applicable standard shall be adjusted so as to equal the ambient noise level.
2) Each of the noise level standards specified in Table NE-2 shall be reduced by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

If an intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period wherein the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

NE-1c: Development of new residential or other noise-sensitive land uses shall not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels as follows:

1) For noise due to traffic on public roadways, railroad line operations and airports; 60 dB Ldn or less in outdoor activity areas, and interior noise levels to 45 dB Ldn or less. Where it is not possible to reduce exterior noise due to traffic on public roadways or railroad line operations to 60 dB Ldn or less using a practical application of the best available noise-reduction technology, an exterior noise level of up to 65 dB Ldn may be allowed. Under no circumstances shall interior noise levels be permitted to exceed 45 dB Ldn with windows and doors closed.
2) For non-transportation-related noise sources, compliance shall be required with the performance standards expressed in Table NE-2.

NE-1d: When industrial, commercial land uses or other uses that have non-transportation-related noise sources are proposed and would affect areas containing noise-sensitive land uses, noise levels generated by the proposed use shall not exceed the performance standards expressed in Table NE-2.

NE-1e: Prior to approval of any discretionary permit for proposed development of residential or other noise-sensitive land uses in a noise-impacted area, an Acoustical Analysis shall be required. The Acoustical Analysis shall:

1) be the responsibility of the applicant;
2) be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics;
3) include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions;
4) include estimated noise levels in terms of Ldn and/or the standards of Table NE-2 for existing and projected future (10-20 years hence) conditions, with a comparison made to the adopted policies of the Noise Element;

5) include recommendations for appropriate noise attenuation and mitigation measures to achieve compliance with the adopted policies and standards of the Noise Element. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance; and
6) include estimates of noise exposure after the prescribed attenuation measures and mitigations have been implemented. If compliance with the adopted standards and policies of the Noise Element would not be achieved, a rationale for acceptability of non-conformity with the standards must be provided, or the project shall not be approved.

NE-1f: Procedures shall be established by the Departments of Public Health and Building Inspections to ensure that requirements imposed pursuant to the findings of an Acoustical Analysis are implemented a part of the building permit issuance process. Noise attenuation measures shall be required as a condition of approval of any discretionary planning or development permit.

NE-1g: Noise level criteria applied to land uses other than residential or other noise-sensitive uses shall conform to the standards expressed in Figure NE-5.

NE-1h: The State Noise Insulation Standards (California Administrative Code, Title 24) and Chapter 35 of the Uniform Building Code concerning the construction of new multiple occupancy dwellings such as hotels, apartments, and condominiums shall be enforced by the County and its agencies.

NE-1i: Noise exposure information developed during the community noise survey and described in this Element shall be used as a guideline for the development of a community noise control ordinance to address noise complaints and to provide local industry with performance standards for future development and equipment modifications. The ordinance should be consistent with the "Model Community Noise Control Ordinance" prepared by the California Office of Noise Control in 1977, with any modifications which are necessary to reflect local concerns and conditions.

NE-1j: New equipment and vehicles purchased by the County and its agencies shall comply with adopted noise level performance standards consistent with the best available noise reduction technology.

NE-1k: The California Highway Patrol shall be encouraged to actively enforce sections of the California Vehicle Code relating to adequate vehicle mufflers and modified exhaust systems.

NE-1l: The standards and policies of the Noise Element shall be incorporated into the performance standards of Sonoma County Zoning Ordinance as appropriate.

NE-1m: The Noise Element shall be periodically reviewed and updated to ensure that noise exposure information and policies are consistent with changing conditions within the community and with any noise control regulations enacted after the adoption of this Element.

NE-1n: Sonoma County may require the monitoring of noise levels after the development of significant new noise sources and noise-sensitive uses in noise-impacted areas to determine if required mitigation measures have brought noise levels into compliance with appropriate standards. This requirement may be imposed as a condition of approval of any discretionary planning or development permits. The cost of monitoring shall be the responsibility of the applicant.

3.2 MANAGEMENT OF TRANSPORTATION-RELATED NOISE

Introduction. Noise generated by transportation sources is by far the most significant and persistent in Sonoma County. Transportation sources include vehicular traffic, expecially trucks, on freeways and other arterial and collector highways, rail operations, and aircraft overflights in the approach areas to airports. Figure NE-1 shows major noise-impacted highways; Figures NE-4a through NE-4e show areas of noise impact at the various public-use airports. An important part of planning for a healthful environment is the avoidance of unnecessary transportation noise. Sections 4.0 and 6.0 of the Circulation and Transit Element include policies which are designed to reduce traffic congetion and keep traffic flowing smoothly; these policies also have the effect of lowering expected future noise levels. The Air Transportation Element establishes policies regarding aircraft opertions at the Sonoma County Airport that will limit the area of exposure to noise impacts in a manner that achieves compatibility with the surrounding community.

GOAL NE-2: It is a goal of the County of Sonoma that the land areas subject to noise impacts from transportation facilities be confined to the smallest feasible areas and that any development therein be compatible with the level of noise exposure.

Objective NE-2.1: It is the County's objective that transportation systems be designed and managed in a manner which produces the lowest feasible noise levels and impacts on noise-sensitive land uses.

Objective NE-2.2: It is the County's objective that highway, railroad, and airport transportation systems and services be provided in a manner that does not extend the area within the boundaries of the 60 dBA noise contours which have been projected by year-2005 for these sources.

The following policies of the County are applicable to transportation-related noise sources. Additional policies regarding airport noise are expressed in the Air Transportation Element.

NE-2a: Detailed noise contour maps showing the projected year-2005 60 dBA contour and noise impact area for transportation sources, including highways, railroad lines, and airports, shall be maintained and made available for inspection by the public at the Planning Department. Noise impact areas shall be defined as land areas subject to a noise level of 55 dBA or greater, as measured by the CNEL or Ldn indices.

NE-2b: Installation of sound barriers along freeways and arterial highways shall be encouraged in non-industrial urban areas which are severely affected by excessive noise levels. Areas potentially eligible for erection of sound barriers are those where an exterior noise level of 70 dBA is reached or exceeded for 10 percent or more of the time during the peak traffic period and which contain residences and/or other noise-sensitive land uses.

NE-2c: Truck traffic routing and curfews may be established where necessary or appropriate to reduce noise impacts in noise-sensitive neighborhoods.

NE-2d: Truck traffic may be assigned to those traffic lanes which would increase the effectiveness of highway noise barriers and of topographic and landscape shielding.

NE-2e: Establishment of speed controls on arterial highways shall include consideration of potential noise impacts as well as safety factors.

NE-2f: Traffic signal synchronization shall place priority upon maintaining steady speeds on heavily traveled arterial highways so as to reduce excessive noise from stop-and-go traffic.

NE-2g: Measures which will reduce the number of vehicle-miles traveled during peak commute periods shall be encouraged for their beneficial effect in reducing vehicular noise along freeways and arterial highways. These measures may include:

1) incentives for carpooling and vanpooling
2) incentives and penalties to increase transit ridership, including parking restrictions and fees, provision of convenient bus turnouts and shelters, and provision of shuttle buses to connect large employment centers to express bus stops.
3) HOV and transit vehicle lanes on the Highway 101 Freeway from the Old Redwood Highway Interchange in Windsor southward to the Marin County line.
4) incentives for flex time and designation of transportation managers for large employers.

NE-2h: Route alignments for new roadways and for major improvements to existing highways shall be selected so as to avoid or minimize, to the extent practicable, noise impacts to noise-sensitive neighborhoods and land uses.

NE-2i: A setback of at least 20 feet, in addition to the setback required by zoning, shall be required and reserved for dense landscaping as a condition of aproval of discretionary development permits on parcels bordering the 101 Freeway in urban service areas. Barriers may be considered where such a requirement would render a parcel unbuildable or otherwise unreasonably restrict its use.

NE-2j: Operations at the Sonoma County Airport shall be managed or limited so as not to extend the area within the 60 CNEL noise contour projected for year-2005, as illustrated in Figure NE-3.

NE-2k: A maximum allowable SENEL standard shall be established at the Sonoma County Airport to assure compliance with policy 2j.

NE-2l: A Noise Control Program (NCP), noise regulations and monitoring shall be established for the Sonoma County Airport.

NE-2m: The County shall utilize the policies of the ALUC Policy Plan to determine land-use compatibility of proposed projects located within the ALUC referral areas at the various public-use airports. These regulations may have the effect of limiting the types and intensities of land uses permissible within the 60 CNEL contours, and of requiring preparation of accoustical analyses in order to show that a proposed structure has been designed to limit intruding noise to the prescribed levels.

3.3 CONTROL OF INDUSTRIAL NOISE

The effects of noise from industrial sources upon adjacent land uses will generally be controlled by the policies expressed in Section 3.1. Exposure to interior noise by employees of industrial firms is regulated by the standards of the Occupational Safety and Health Administration (OSHA), which are also enforced in California by Cal-OSHA, a division of the California Department of Industrial Relations. The OSHA standards are intended as a health measure to prevent impairment of hearing as a result of industrial noise. Noise control measures acceptable to OSHA include engineering controls, hearing protective devices, and employee scheduling. A hearing conservation program is required where the average noise exposure exceeds 85 dBA.

Goal NE-3: It is a goal of the County of Sonoma that its citizens be protected from occupational exposure to excessive noise levels, and that noise from industrial sources not adversely impact any adjacent land areas.

Objective NE-3.1: It is the County's objective that occupational exposure to noise in the work setting be controlled in accordance with OSHA requirements.

Objective NE-3.2: It is the County's objective that noise levels from industrial sources not exceed the existing or normal ambient level at any boundary of the industrial parcel by more than 5dB, except for resource-related uses located in sparsely settled rural areas.

The following policies of the County are applicable to occupational or industrial noise:

NE-3a: The Department of Public Health shall be the agency designated to assure that OSHA standards are effectively enforced within Sonoma County, and shall be responsible for noise measurements and the review of accoustical reports submitted as part of an application for a discretionary planning or development permit.

NE-3b: An accoustical analysis prepared by a qualified accoustical consultant experienced in the fields of environmental noise and architectural accoustics may be required prior to approval of any discretionary planning or development permit for proposed commercial or industrial projects which entail generation of a noise level of 85 db or greater; the accoustical report shall identify:

1) any measures which would be necessary to reduce the noise level at the boundary of the parcel to no more than 5 db above the normal ambient noise level; except that in the "geothermal and mineral resource" and "timberland" land-use categories, the noise level may be as high as 65 db at the parcel boundary provided that no adjacent residential uses would be affected; and

2) any protective measures which could prevent hearing impairment of employees exposed to excessive noise levels in either an interior or exterior work environment.

NE-3c: Various noise control measures may be required as conditions of approval of discretionary planning and development permits for commercial and industrial uses, including but not limited to the following:

1) requirements for creation of sound barriers, berms, and/or landscaping to attenuate noise.
2) restrictions on the time of day and/or days of week for operations of the establishment.
3) restrictions on truck traffic and deliveries.

4.0 NOISE ELEMENT IMPLEMENTATION PROGRAM: 1987-1992

In addition to the policies expressed in this Element, several additional implementation measures will require separate decisions by administrative agencies or the Board of Supervisors in the future. The Planning Department is responsible for review of development proposals to identify potential noise conflicts and recommend specific conditions of approval to insure that the Noise Element policies are implemented. The Building Inspection Department is responsible for coordinating with the Planning Department to confirm that required noise mitigation measures are included in final project design and construction. The Health Department shall serve as a technical resource, and is responsible for noise measurements and the review of submitted acoustical reports.

Noise Element Program 1: Incorporation of Noise Analysis in Permit Review Procedures

Type of Program: Administrative
Responsible Agency: Planning, Public Health, and Building Inspection Departments
Timeframe: Ongoing
Budgetary Impact: No increase in departmental budget allocations
Policy References: NE-1b,-1c,-1e,-1f,-1g; NE-3b,3c.

Program Description: Special permit review procedures will be established for proposed projects which involve generation of significant noise levels and projects which are located in noise-impacted areas. Acoustical reports may be required to be prepared for these projects and would include an identification of appropriate noise attenuation measures to incorporated into the design of the project. Potential design approaches to noise reduction or attenuation are discussed in Exhibit NE-1. Specific guidelines for design in noise-impacted environments may be included in the design review manual. Accoustical reports would be

required to address the effectiveness of any noise mitigations incorporated into project design; these reports would be reviewed and any additional conditions recommended by the Department of Public Health prior to action on the permit by the applicable decision-making body. Building Inspections would be responsible for field verification that such measures have been incorporated into actual development and construction of the project. Monitoring of ambient noise following completion of the project may be required in order to assess the effectiveness of any noise attenuation conditions.

Noise Element Program 2: Noise Ordinance

Type of Program: Public Health and/or zoning ordinance amendment
Responsible Agency: County Counsel, Planning, and Public Health Departments
Timeframe: Adoption within two years following adoption of revised General Plan
Budgetary Impact: No increase in departmental staffing. Possible need to purchase noise monitoring equipment
Policy References: NE-1b,-1d,-1g,-1i.

Program Description: Preparation of draft ordinance by County Counsel and Planning and Public Health Departments. Ordinance to include noise performance standards expressed in Table NE-2, and/or others as appropriate, exclusion of sources, measurement methods and procedures for variances and enforcement. Review by cities, county departments and Planning Commission. Adoption by Board of Supervisors. Enforcement by County Public Health Department.

Noise Element Program 3: Sonoma County Airport Noise Control Program

Type of Program: Policy Resolution by Board of Supervisors; administrative regulations for flight operations at airport
Responsible Agency: Airport Department
Timeframe: Adoption within two years of adoption of revised General Plan
Budgetary Impact: No increase in departmental budget allocations; potential federal funding.
Policy References: NE-2j,-2k,-2l.

Program Description: Prepare work program and request for Federal Aviation Administration (FAA) funding for "FAA Part 150 Noise Compatibility Program". Consult with airport users and environs residents. Prepare draft ordinance with maximum single-event noise levels, flight procedures, other regulations, airline access standards for leases and operating agreements with air carriers, and procedures for monitoring and enforcement. Review by public, ALUC and County departments. Adoption by Board of Supervisors. Enforcement by Airport Department.

EXHIBIT NE-1

Incorporation of Noise Control Features in the Design of Proposed Projects

Any noise problem may be considered as being composed of three basic elements: the noise source, a transmission path, and a receiver. Local control of noise sources is practical only with respect to fixed sources (e.g., industrial facilities, outdoor activities, etc.), as control of vehicular noise emission is generally preempted by federal or state law. Control of many fixed noise sources is usually best obtained by enforcement of noise control ordinance. The emphasis of noise control in land use planning by the County of Sonoma is, therefore, placed primarily upon acoustical treatment of the transmission path and the receiving structures.

The appropriate acoustical treatment for a given project should consider the nature of the noise source and the sensitivity of the receiver. The problem should be defined in terms of appropriate criteria (Ldn, Leq, or Lmax), the location of the sensitive receiver (inside or outside), and when the potential problem would occur (daytime or nighttime). Noise control techniques should then be selected to provide an acceptable noise environment for the receiving property while remaining consistent with local aesthetic standards and practical structural and economic limits. Basic noise control techniques to be employed may include the following:

Setbacks: Noise exposure may be reduced by increasing the distance between the noise source and receiving use. Setback areas can take the form of open space, frontage roads, recreational areas, storage yards, etc. The noise attenuation resulting from this technique is limited, but is generally 4 to 6 dBA per doubling of distance from the source.

Barriers: Shielding by barriers can be obtained by placing walls, berms or other structures, such as buildings, between the noise source and the receiver. The effectiveness of a barrier depends upon blocking line-of-sight between the source and receiver. For maximum effectiveness, barriers must be continuous and relatively air-tight along their length and height. satisfaction of these criteria requires substantial and well-fitted barrier materials, placed to intercept line-of-sight to all significant noise sources. Earth, in the form of berms or the face of a depressed area, is also an effective barrier material. Because of the size and visibility of many noise barriers, aesthetic considerations should plan an important part in their design.

Site Design. The use of one building to shield another can significantly reduce overall project noise control costs. As an example, carports or garages can be used to form or complement a barrier shielding adjacent dwellings or an outdoor activity area. Similarly, one residential unit can be placed to shield another so that noise reduction measures are needed for only the building closest to the noise source. Placement of outdoor activity areas within the shielded portion of a building complex, such as a central courtyard, can be an effective method of providing a relatively quiet outdoor setting in an otherwise noisy environment.

Unit Design. When structures have been located to provide maximum noise reduction by barriers or site design, noise reduction measures may still be required to achieve an acceptable interior noise environment. The cost of such measures may be reduced by placement of interior dwelling unit features. For example, bedrooms, living rooms, family rooms and other noise-sensitive portions of a dwelling can be located on the side of the unit farthest from the noise source.

Building Design. In some cases, external building facades can influence reflected noise levels affecting adjacent buildings. This is primarily a problem where high-rise buildings are proposed, and the effect is most evident in urban areas, where an "urban canyon" may be created. Bell-shaped or irregular building facades, as well as attention to the orientation of the buildings, can reduce this effect. When interior noise levels are of concern in a noisy environment, noise reduction may be obtained through acoustical design of building facades. Standard residential construction practices provide 12-15 dBA noise reduction for building facades with open windows, and 20-25 dBA noise reduction when windows are closed. Thus a 20 dBA exterior-to-interior noise reduction can be obtained by the requirement that building design include an adequate ventilation system, allowing windows on a noise-impacted facade to remain closed under any weather condition.

Use of Vegetation. Although it is commonly believed that trees and other vegetation provide significant noise attenuation, approximately 100 feet of dense foliage (so that no visual path extends through the foliage) would be required to achieve a modest 5 dBA attenuation of traffic noise. Thus the use of vegetation as a noise barrier should not generally be considered a practical method of noise control unless large tracts of dense foliage are part of the existing landscape. Vegetation, however, can be used to acoustically "soften" intervening ground between a noise source and receiver, increasing ground absorption of sound and thus increasing the attenuation of sound with distance. Planting of trees and shrubs is also of aesthetic and psychological value and may reduce adverse public reaction to a noise source by removing the source from view, even though ambient noise levels may be largely unaffected.